The business magazine of the farm & industrial equipment industry

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Tractor and equipment specifications
Hydraulic components data
Nebraska test reports
Full contents page A2

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The business magazine of the farm and industrial equipment industry

67th annual RED BOOK issue

ADVERTISERS' INDEX 367

ENGINES:
Under 45 Cubic Inches Displacement 63
45 Cubic Inches Displacement and Larger 70

EQUIPMENT:
Combines, Pull Type 158
Combines, Self-Propelled 152
Corn Shellers 219
Crop Drying Equipment 270
Cultivators, Field 292
Cultivators, Row Crop, Mounted 299
Elevators, Auger Type 265
Elevators, Belt and Chain Types 260
Feed Grinder-Mixers 284
Fertilizer Spreaders, Broadcast Type 242
Flail Cutters 210
Forage Blowers 217
Forage Harvesters, Cylinder and Flywheel Types 214
Forage Harvesters, Flail Cutter Types 213
Harrows, Disk 303
Hay Balers, Conventional Size Bale 184
Hay Balers, Big Package 186
Hay Mowers, Drum and Disk Types 180
Hay Stacking Wagons (Loose Hay) 188
Hay Tub Grinders 287
High Pressure Washers 288
Liquid Herbicide Applicators 230
Loaders, Tractor Front Mounted Farm Type 248
Mower-Conditioners, Cutterbar Pull Type . . . 176
Mower-Conditioners, Self-Propelled 174
Power Harrows 240
Roadside Mowers, Boom & Sidearm Mtd. . . . 207
Rotary Cutters 188
Rotary Tillers 235
Sprayers, Air Mist 231
Sprayers, Hydraulic 220
Wagons, Auger Unloading 278
Wagons, Feed Mixer 281
Wagons, Forage and Cross Conveyor 282
Wagons, Hay Stacking 188
Windrowers, Pull Type 176
Windrowers, Self-Propelled 174

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HYDRAULIC COMPONENTS:

Hydraulic Control Valves 134
Hydraulic Couplings, Self-Sealing 147
Hydraulic Cylinders 140
Hydraulic Motors 124
Hydraulic Pumps 114
Hydraulic Pump and Valve Packages 133

NEBRASKA TRACTOR TESTS:

Explanation of Test Reports 310
Index of 1982 Tractor Test Reports 309
The Nebraska Tractor Test Law 310
Ten-Year Summary of Test Reports, 1973-1982 360

TIRES:

Liquid Ballast Table for Agricultural Tires 112
Tire Air Pressure, Load and Tangential (Drawbar) Pull Capacity Charts 106

TRACTORS:

Agricultural Crawler Tractors 6
Agricultural Wheel Type
  Four-Wheel Drive 53
  Two-Wheel Drive, With or Without Front Drive Option 11
Tractor Engine Valve Spring Specifications 100
Tractor Serial Numbers 101
Tractor PTO HP & Tune-Up Specs 97

TRANSPORT EQUIPMENT GROUNDLOADING

Field Implement Transport 173
Gooseneck Trailers 169
Pull Trailers (4T & Over) 160
Semi Trailers 166
Truck Flatbeds 172

Abbreviations:
DNA – Does not apply.
NA – Not available.
Std. – Standard.
Opt. – Optional
Linear measurements may be to nearest ¼-inch.

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contents

Tractor Make & Model Test No. Page No.

ALLIS-CHALMERS

6140 Diesel 10 Speed 1445 352
8010 Powershift Diesel 12 Speed 1446 353
8030 Powershift Diesel 12 Speed 1447 354
8050 Powershift Diesel 12 Speed 1448 355
8070 Powershift Diesel 12 Speed 1449 356

JOHN DEERE

8850 Diesel 16 Speed 1434 341
8650 Diesel 16 Speed 1435 342
8450 Diesel 16 Speed 1436 343
1250 Diesel 9 Speed 1437 344

DEUTZ

DX-130 Diesel 24 Speed 1404 313
DX-120 Diesel 15 Speed 1405 314

FORD

2610 (8x2) Diesel 8 Speed 1421 328
3610 (8x2) Diesel 8 Speed 1422 329
3610 (8x4) Diesel 8 Speed 1423 330
4110 (8x2) Diesel 8 Speed 1424 331
4110 (8x4) Diesel 8 Speed 1425 332
4610 (8x2) Diesel 8 Speed 1426 333
4610 SU (8x2) Diesel 8 Speed ... 1426 333
4610 (8x4) Diesel 8 Speed 1427 334
4610 SU (8x4) Diesel 8 Speed ... 1427 334
5610 (16x4) Diesel 16 Speed 1428 335
5610 (16x4) Diesel 8 Speed 1428 335
5610 (16x8) Diesel 16 Speed 1429 336
5610 (16x8) Diesel 8 Speed 1429 336
6610 (16x4) Diesel 16 Speed 1430 337
6610 (16x4) Diesel 8 Speed 1430 337
6710 (16x4) Diesel 16 Speed 1430 337
6710 (16x4) Diesel 8 Speed 1430 337
6610 (16x8) Diesel 16 Speed 1431 338
6610 (16x8) Diesel 8 Speed 1431 338
6710 (16x8) Diesel 16 Speed 1431 338
6710 (16x8) Diesel 8 Speed 1431 338
7610 (16x4) Diesel 16 Speed 1432 339
7610 (16x4) Diesel 8 Speed 1432 339
7710 (16x4) 16 Speed 1432 339
7710 (16x4) Diesel 8 Speed 1432 339
7710 (16x8) Diesel 16 Speed 1433 340
7710 (16x8) Diesel 8 Speed 1433 340
7610 (16x8) Diesel 16 Speed 1433 340
7610 (16x8) Diesel 8 Speed 1433 340

HESSTON

1380 DT Flat Diesel 12 Speed ... 1409 317
1380 Flat Diesel 12 Speed 1409 317
1380 DT Turbo Flat Diesel 12 Speed 1409 317
1380 Turbo Flat Diesel 12 Speed 1409 317
1880 DT Flat Diesel 12 Speed ... 1410 318
1880 Flat Diesel 12 Speed 1410 318

Tractor Make & Model Test No. Page No.

HESSTON Cont.

1880 DT Turbo Flat Diesel 12 Speed 1410 318
1880 Turbo Flat Diesel 12 Speed 1410 318
1180 DT Turbo Flat Diesel 12 Speed 1450 357
1180 Turbo Flat Diesel 12 Speed 1450 357
1580 DT Turbo Flat Diesel 12 Speed 1451 358
1580 Turbo Flat Diesel 12 Speed 1451 358

INTERNATIONAL HARVESTER

5088 Diesel 18 Speed 1419 326
5288 Diesel 18 Speed 1420 327
3288 Diesel 16 Speed 1438 345
3488 Hydro Diesel Hydrostatic .. 1439 346
3688 Diesel 16 Speed 1440 347
5488 Diesel 18 Speed 1441 348

KUBOTA

L235 4WD Diesel 8 Speed 1406 315
L235 Diesel 8 Speed 1406 315
L275 4WD 8 Speed 1407 316
L275 Diesel 8 Speed 1407 316

LONG

510 Diesel 8 Speed 1415 323
510 DTC Diesel 8 Speed 1416 324
610 Diesel 8 Speed 1417 326

MASSEY-FERGUSON

MF 154-4 Diesel 12 Speed 1411 319

STIEGER

Cougar III ST-280 Cummins Diesel 20 Speed 1401 311
Cougar III PTA-280 Cummins Diesel 10 Speed 1402 312
Cougar III ST-280 Caterpillar Diesel 20 Speed 1412 320
Cougar III PTA-280 Caterpillar Diesel 10 Speed 1413 321
Bearcat III ST-225 Diesel 20 Speed 1414 322
Cougar III ST-250 Diesel 20 Speed 1452 359

YANMAR

YM 226D Diesel 9 Speed 1442 349
YM 226 Diesel 9 Speed 1442 349
YM 276D Diesel 12 Speed 1443 350
YM 276 Diesel 12 Speed 1443 350
YM 336D Diesel 12 Speed 1444 351
YM 336 Diesel 12 Speed 1444 351

The Nebraska Tractor Test Law

Purpose of the Law—The Nebraska Tractor Test Law originated in 1919 for the purpose of verifying advertising claims on tractors offered for sale to Nebraska farmers.

Its position as the only independent test laboratory in the United States devoted to the evaluation of tractor performance proved of unique value to the industry. The Agricultural Tractor Test Code used in the Nebraska Tests was developed with the approval and assistance of the American Society of Agricultural Engineers and the Society of Automotive Engineers, and is revised and updated periodically as the need arises. The Test Code (ASAE S209.4 or SAE J708c) is published in the ASAE Yearbook and SAE Handbook.

Provisions of the Law—Stated briefly, the Nebraska Tractor Test Law provides:

That a stock unit of each agricultural tractor model sold in Nebraska shall be tested and passed upon by a board of three engineers under the supervision and direction of the University of Nebraska. Each tractor must be certified as a stock model and will be equipped with the common power consuming accessories. An official representative of the manufacturer is present during the test to see that the performance meets company standards.

The Department of Agriculture shall deny to any manufacturer the right to do business in the State on complaint of two or more bona fide customers that the company has failed to maintain an adequate service station with a full supply of replacement parts within the state and within reasonable distance of customers.

The law further states that it shall be unlawful to publish excerpts from any official test in advertising material without publishing the entire report.

The provisions of the Nebraska Test Law do not apply to any tractor the engine of which develops less than 20 horsepower; or to tractors manufactured, sold and used for heavy construction when identical units are not sold and used for agricultural purposes.

Explanation of Test Report

General

Tractors are tested at the University of Nebraska according to the Agricultural Tractor Test Code approved by the American Society of Agricultural Engineers and the Society of Automotive Engineers or official Nebraska test procedure.

The manufacturer selects the tractor to be tested and certifies that it is a stock model. Each tractor is equipped with the common power consuming accessories such as power steering, power lift pump, generator, etc., if available. Power consuming accessories may be disconnected only when the means for disconnecting can be reached from the operating station. An official representative of the company is present during the test to see that the tractor gives its optimum performance. Additional weight may be added to the tractor as ballast if the manufacturer recommends use of such ballast. The static tire loads and the tire inflation pressures must conform to the specifications of Tire and Rim Association.

Preparation for Test

The engine crankcase is drained and refilled with new oil conforming to specifications in the operator's manual. The operator's manual is also used as the guide for selecting the proper fuel and for routine lubrication and maintenance operations.

The tractor is limbered up for a minimum of three hours on the drawbar. Preliminary adjustment of the tractor is permitted at this time. Any parts added or replaced during the limber-up run, or any subsequent runs, are mentioned in the individual test reports. The tractor is equipped with approximately the amount of added ballast that is to be used during the drawbar runs.

PTO Performance

Power take-off performance runs are made by connecting the power take-off to a dynamometer. During a preliminary power take-off run the manufacturer's representative may make adjustment for the fuel, ignition or injection timing and governor control settings. These settings must be maintained for the remainder of the test. The manually operated governor control mechanism is set to provide the high-idle speed specified by the manufacturer. During the power take-off runs an ambient air temperature of approximately 75°F. (24.0°C) is maintained.

Maximum power is obtained at the rated engine speed specified by the manufacturer with the governor control lever set for maximum power. This same setting is used for all subsequent PTO runs. Time of the run is two hours. Whenever the power take-off speed during the maximum power run differs from the speeds set forth in the ASAE and SAE standards, an additional run is made at either 540 or 1000 rpm of the power take-off shaft. Time of this run is one hour.

Drawbar Performance

Maximum drawbar power is shown for the normal field speed selected by the manufacturer. All engine adjustments are the same as those used in the power take-off runs. If the manufacturer specifies a different rated engine speed for drawbar operations, then the position of the manually operated governor control is changed to provide the high-idle speed specified.

Maximum drawbar power is determined within the following limits: (1) slip of the drivers must not exceed 15% for pneumatic tires on the concrete test course or 7% for steel cleats on the well packed earthen test course, (2) ground speeds must not exceed 10 miles per hour, (3) safe stability limits of the tractor must not be exceeded, (4) no other operating limit of the tractor must be exceeded. Drawbar load is applied until the manufacturer's rated engine speed is obtained with maximum governor control lever setting. Travel speed, drawbar pull and other data are recorded over two 500-foot straight level areas.

Fuel consumption is determined at the manufacturer's selected travel speed with the drawbar pull set: (1) to give rated engine rpm, (2) 75% of the pull at rated engine rpm, (3) 50% of the pull at rated engine rpm, and (4) maintaining the same load and travel speed as in (3) by shifting to a higher gear and reducing the engine rpm.

This summary shows the drawbar horsepower, corresponding travel speed and fuel consumption at 100%, 75% or 50% loads, and 50% of pull at reduced engine speed.

Also shown is the maximum drawbar horsepower produced for two 500-foot travel sections and corresponding travel speed, the maximum drawbar pull and the corresponding drive-wheel slippage.

In addition, the "lugging ability" obtained by increasing the load so that the full throttle engine speed drops to 80% of rated is given as a percent increase with respect to the pull at rated engine rpm.

The maximum drawbar horsepower and the corresponding speed and drawbar pull for other selected gears or travel speeds are shown in the individual test reports.

Sound Measurement

Sound is recorded during each of the Drawbar Performance runs as the tractor travels on a straight section of the test course. The dB(A) sound level is obtained with the microphone located near the right ear of the operator. Bystander sound readings are taken with the microphone placed 25 feet (7.5 m) from the line of travel of the tractor. An increase of 10dB(A) will approximately double the loudness to the human ear.

Individual copies of any test report, annual summary booklets or annual subscription (at $4.50) are available. For complete information write to **Department of Agricultural Engineering, Univ. of Nebraska—Lincoln, Lincoln, NE 68583.**

NEBRASKA TRACTOR TEST 1401
STEIGER COUGAR III ST-280 CUMMINS DIESEL
20 SPEED

DRAWBAR PERFORMANCE AT 2100 RPM

Power Hp *(kW)*	Drawbar pull lbs *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr *(l/h)*	lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg *(kPa)*
Maximum Available Power—Two Hours 12th Gear											
228.81 *(170.62)*	12455 *(55.40)*	6.89 *(11.09)*	2099	2.71	15.723 *(59.516)*	0.473 *(0.288)*	14.55 *(2.867)*	171 *(76.9)*	54 *(11.9)*	60 *(15.3)*	28.880 *(97.523)*
75% of Pull at Maximum Power—Ten Hours 12th Gear											
189.62 *(141.40)*	9658 *(42.96)*	7.36 *(11.85)*	2230	2.12	14.365 *(54.376)*	0.522 *(0.317)*	13.20 *(2.600)*	171 *(76.9)*	62 *(16.4)*	70 *(20.8)*	28.798 *(97.247)*
50% of Pull at Maximum Power—Two Hours 12th Gear											
129.78 *(96.78)*	6442 *(28.66)*	7.55 *(12.16)*	2277	1.55	11.747 *(44.466)*	0.623 *(0.379)*	11.05 *(2.176)*	168 *(75.3)*	66 *(18.6)*	73 *(22.8)*	28.925 *(97.675)*
50% of Pull at Reduced Engine Speed—Two Hours 16th Gear											
130.46 *(97.29)*	6452 *(28.70)*	7.58 *(12.20)*	1382	1.66	8.842 *(33.469)*	0.467 *(0.284)*	14.76 *(2.907)*	170 *(76.4)*	68 *(20.0)*	77 *(24.7)*	28.940 *(97.726)*

MAXIMUM POWER IN SELECTED GEARS

Power Hp *(kW)*	Drawbar pull lbs *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Gear	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg *(kPa)*
197.47 *(147.25)*	31517 *(140.19)*	2.35 *(3.78)*	2161	14.85	4th Gear	169 *(76.1)*	59 *(15.0)*	61 *(16.1)*	28.870 *(97.490)*
220.46 *(164.40)*	29827 *(132.68)*	2.77 *(4.46)*	2099	9.61	5th Gear	170 *(76.7)*	61 *(16.1)*	65 *(18.3)*	28.880 *(97.523)*
227.18 *(169.41)*	26568 *(118.18)*	3.21 *(5.16)*	2099	7.30	6th Gear	172 *(77.5)*	61 *(16.1)*	70 *(21.1)*	28.820 *(97.321)*
229.11 *(170.85)*	23393 *(104.06)*	3.67 *(5.91)*	2099	5.79	7th Gear	172 *(77.5)*	61 *(16.1)*	70 *(21.1)*	28.820 *(97.321)*
233.55 *(174.16)*	20949 *(93.19)*	4.18 *(6.73)*	2099	4.79	8th Gear	171 *(77.2)*	61 *(16.1)*	70 *(21.1)*	28.850 *(97.355)*
236.39 *(176.27)*	18706 *(83.21)*	4.74 *(7.63)*	2099	4.24	9th Gear	172 *(77.8)*	61 *(16.1)*	70 *(21.1)*	28.840 *(97.388)*
236.82 *(176.60)*	16530 *(73.53)*	5.37 *(8.65)*	2100	3.32	10th Gear	173 *(78.3)*	62 *(16.7)*	71 *(21.7)*	28.850 *(97.422)*
236.43 *(176.31)*	14552 *(64.73)*	6.09 *(9.81)*	2100	3.12	11th Gear	173 *(78.3)*	60 *(15.6)*	70 *(21.1)*	28.860 *(97.456)*
235.61 *(175.69)*	12832 *(57.08)*	6.89 *(11.08)*	2098	2.63	12th Gear	173 *(78.3)*	59 *(15.0)*	67 *(19.4)*	28.860 *(97.456)*
233.27 *(173.95)*	10963 *(48.77)*	7.98 *(12.84)*	2099	2.30	13th Gear	173 *(78.3)*	60 *(15.6)*	68 *(20.0)*	28.860 *(97.456)*
232.67 *(173.50)*	9672 *(43.03)*	9.02 *(14.52)*	2100	1.97	14th Gear	173 *(78.3)*	61 *(16.1)*	71 *(21.7)*	28.850 *(97.422)*

LUGGING ABILITY IN 12th GEAR

Crankshaft Speed rpm	2098	1889	1678	1468	1257	1056
Pull—lbs *(kN)*	12832 *(57.08)*	15482 *(68.87)*	17542 *(78.03)*	19145 *(85.16)*	18673 *(83.06)*	16873 *(75.05)*
Increase in Pull %	0	21	37	49	46	31
Power—Hp *(kW)*	235.61 *(175.69)*	254.55 *(189.81)*	254.73 *(189.95)*	242.26 *(180.65)*	202.46 *(150.98)*	154.31 *(115.07)*
Speed—Mph *(km/h)*	6.89 *(11.08)*	6.17 *(9.92)*	5.45 *(8.76)*	4.75 *(7.64)*	4.07 *(6.54)*	3.43 *(5.52)*
Slip %	2.63	3.20	3.84	4.32	4.16	3.84

TRACTOR SOUND LEVEL WITH CAB	1700 RPM dB(A)	2100RPM dB(A)
Maximum Available Power—Two Hours	78.0	79.0
75% of Pull at Maximum Power—Ten Hours		79.0
50% of Pull at Maximum Power—Two Hours		79.0
50% of Pull at Reduced Engine Speed—Two Hours		78.0
Bystander in 20th gear		103.5

Department of Agricultural Engineering

Dates of Test: August 27 to September 9, 1981

Manufacturer: STEIGER TRACTOR, INC., 1701 Westview Drive, Fargo, North Dakota 58103

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 46.3 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60°** *(15°/15°)* 0.8269 **Fuel weight** 6.885 lbs/gal *(0.825 kg/l)* **Oil SAE** 15W-40 **API service classification** CD CC SE **To motor** 7.850 gal *(29.717 l)* **Drained from motor** 7.322 gal *(27.717 l)* **Transmission and hydraulic lubricant** SAE 10 hydraulic oil **Final drive lubricant** SAE 85W90 **Total time engine was operated** 52.0 hours.

ENGINE: Make Cummins Diesel **Type** six cylinder vertical with turbocharger **Serial No.** 10972835 **Crankshaft** lengthwise **Rated rpm** 1700 to 2100 **Bore and stroke** 5.5" × 6.0" *(139.7 mm × 152.4 mm)* **Compression ratio** 14.1 to 1 **Displacement** 855 cu in *(14013 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements with aspirator **Oil filter** one full flow cartridge and one bypass cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic oil, radiator for transmission and transfer case oil **Fuel filter** two paper cartridges **Muffler** none **Cooling medium temperature control** one thermostat.

CHASSIS: Type four wheel dirve with duals **Serial No.** 110-00026 81 **Tread width** rear 79.0" *(2007 mm)* to 136.4" *(3464 mm)* front 79.0" *(2007 mm)* to 136.4" *(3464 mm)* **Wheel base** 128" *(3251 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 76.9" *(1953 mm)* Vertical distance above roadway 45.4" *(1153 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph (km/h)** first 1.8 *(2.9)* second 2.0 *(3.3)* third 2.3 *(3.7)* fourth 2.6 *(4.2)* fifth 3.0 *(4.8)* sixth 3.3 *(5.4)* seventh 3.8 *(6.1)* eighth 4.2 *(6.8)* ninth 4.8 *(7.7)* tenth 5.4 *(8.6)* eleventh 6.1 *(9.8)* twelfth 6.8 *(11.0)* thirteenth 7.9 *(12.7)* fourteenth 8.8 *(14.2)* fifteenth 10.1 *(16.2)* sixteenth 11.3 *(18.1)* seventeenth 12.6 *(20.3)* eighteenth 14.1 *(22.7)* nineteenth 16.0 *(25.8)* twentieth 17.9 *(28.8)* reverse 1.8 *(2.9)*, 2.0 *(3.3)*, 2.3 *(3.7)*, 2.6 *(4.1)* **Clutch** dual dry disc hydraulically operated by foot pedal **Brakes** multiple dry disc hydraulically operated by foot pedal or mechanically by hand lever **Steering** hydrostatic and articulated **Turning radius** (on concrete surface without brake) right 279" *(7.09 m)* left 278" *(7.06 m)* **Turning space diameter** (on concrete surface without brake) right 583" *(14.80 m)* left 581" *(14.76 m)* **Power take-off** none.

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

DRAWBAR PERFORMANCE AT 1700 RPM

Power Hp *(kW)*	Drawbar pull lbs *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr *(l/h)*	lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg *(kPa)*
Maximum Available Power—Two Hours 12th Gear											
249.69 *(186.19)*	16962 *(75.45)*	5.52 *(8.88)*	1700	3.64	15.541 *(58.829)*	0.429 *(0.261)*	16.07 *(3.165)*	176 *(79.7)*	57 *(13.9)*	65 *(18.1)*	28.890 *(97.557)*

MAXIMUM POWER IN SELECTED GEARS

Power Hp *(kW)*	Drawbar pull lbs *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Gear	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg *(kPa)*
225.35 *(168.04)*	31335 *(139.38)*	2.70 *(4.34)*	1700	14.60	7th Gear	173 *(78.3)*	63 *(17.2)*	67 *(19.4)*	28.890 *(97.557)*
241.09 *(179.78)*	27610 *(122.82)*	3.27 *(5.27)*	1701	8.18	8th Gear	175 *(79.4)*	61 *(16.1)*	70 *(21.1)*	28.830 *(97.355)*
248.21 *(185.09)*	24789 *(110.27)*	3.75 *(6.04)*	1700	6.17	9th Gear	175 *(79.4)*	61 *(16.1)*	70 *(21.1)*	28.840 *(97.388)*
252.78 *(188.50)*	22169 *(98.61)*	4.28 *(6.88)*	1699	5.25	10th Gear	175 *(79.4)*	62 *(16.7)*	71 *(21.7)*	28.850 *(97.422)*
255.17 *(190.28)*	19645 *(87.39)*	4.87 *(7.84)*	1701	4.39	11th Gear	177 *(80.6)*	61 *(16.1)*	71 *(21.7)*	28.860 *(97.456)*
255.77 *(190.73)*	17390 *(77.35)*	5.52 *(8.88)*	1699	3.76	12th Gear	176 *(80.0)*	60 *(15.6)*	68 *(20.0)*	28.860 *(97.456)*
256.45 *(191.23)*	15003 *(66.74)*	6.41 *(10.32)*	1701	3.04	13th Gear	177 *(80.3)*	60 *(15.6)*	69 *(20.6)*	28.860 *(97.456)*
255.66 *(190.64)*	13233 *(58.86)*	7.25 *(11.66)*	1700	2.79	14th Gear	177 *(80.3)*	61 *(16.1)*	71 *(21.7)*	28.850 *(97.422)*
254.00 *(189.41)*	11612 *(51.65)*	8.20 *(13.20)*	1698	2.47	15th Gear	176 *(80.0)*	61 *(16.1)*	71 *(21.7)*	28.850 *(97.422)*

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi *(kPa)*	Four 23.1-34; 8; inner 14 *(95)* outer 12 *(85)*	Four 23.1-34; 8; inner 14 *(95)* outer 12 *(85)*
Ballast	—Liquid (each)	None	None
	—Test Equip. (each)	80 lb *(36 kg)*	None
Front Tires	—No., size, ply & psi *(kPa)*	Four 23.1-34; 8; inner 14 *(95)* outer 12 *(85)*	Four 23.1-34; 8; inner 14 *(95)* outer 12 *(85)*
Ballast	—Liquid (each inner)	1152 lb *(523 kg)*	None
	—Cast Iron (each)	None	None
Height of Drawbar		18.5 in *(470 mm)*	18.5 in *(470 mm)*
Static Weight with Operator	—Rear	12820 lb *(5815 kg)*	12500 lb *(5670 kg)*
	Front	20285 lb *(9201 kg)*	17980 lb *(8156 kg)*
	Total	33105 lb *(15016 kg)*	30480 lb *(13826 kg)*

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump was maintained at 133°F *(56.1°C)* Eleven gears were chosen between 15% slip and 10 mph *(16.1 km/h)*.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1401.**

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

Steiger Cougar III ST-280 Cummins Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Roy G. Arnold, Director

NEBRASKA TRACTOR TEST 1402
STEIGER COUGAR III PTA 280 CUMMINS DIESEL
10 SPEED

DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	Fuel Consumption lb/hp.hr (kg/kW.h)	Fuel Consumption Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Temp. °F (°C) Air wet bulb	Temp. °F (°C) Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 5th (4L) Gear											
217.04 *(161.85)*	14679 *(65.30)*	5.54 *(8.92)*	2099	2.97	15.795 *(59.791)*	0.501 *(0.305)*	13.74 *(2.707)*	174 *(78.6)*	74 *(23.1)*	85 *(29.2)*	28.970 *(97.827)*
75% of Pull at Maximum Power—Ten Hours 5th (4L) Gear											
176.96 *(131.96)*	11397 *(50.70)*	5.82 *(9.37)*	2187	2.23	14.114 *(53.427)*	0.549 *(0.334)*	12.54 *(2.470)*	170 *(76.8)*	62 *(16.8)*	74 *(23.1)*	29.083 *(98.209)*
50% of Pull at Maximum Power—Two Hours 5th (4L) Gear											
121.11 *(90.31)*	7623 *(33.91)*	5.96 *(9.59)*	2221	1.49	11.601 *(43.916)*	0.660 *(0.401)*	10.44 *(2.056)*	169 *(76.1)*	65 *(18.3)*	78 *(25.6)*	28.950 *(97.692)*
50% of Pull at Reduced Engine Speed—Two Hours 7th (2H) Gear											
122.06 *(91.02)*	7686 *(34.19)*	5.96 *(9.58)*	1539	1.32	8.769 *(33.195)*	0.495 *(0.301)*	13.92 *(2.742)*	170 *(76.7)*	67 *(19.2)*	84 *(28.9)*	28.885 *(97.540)*

MAXIMUM POWER IN SELECTED GEARS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Gear	Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
149.78 *(111.69)*	32625 *(145.12)*	1.72 *(2.77)*	2187	14.82	1st (1L) Gear	171 *(76.9)*	61 *(16.1)*	68 *(20.0)*	28.930 *(97.692)*
214.86 *(160.22)*	23861 *(106.14)*	3.38 *(5.43)*	2099	5.72	2nd (2L) Gear	173 *(78.3)*	73 *(22.8)*	83 *(28.3)*	28.940 *(97.726)*
211.67 *(157.84)*	18476 *(82.19)*	4.30 *(6.91)*	2101	3.77	3rd (1H) Gear	174 *(78.6)*	73 *(22.8)*	84 *(28.9)*	28.940 *(97.726)*
220.36 *(164.32)*	19015 *(84.58)*	4.35 *(6.99)*	2101	3.93	4th (3L) Gear	173 *(78.3)*	73 *(22.8)*	84 *(28.9)*	28.940 *(97.726)*
224.92 *(167.72)*	15215 *(67.68)*	5.54 *(8.92)*	2099	2.97	5th (4L) Gear	173 *(78.3)*	73 *(22.8)*	84 *(28.9)*	28.940 *(97.726)*
220.54 *(164.46)*	11818 *(52.57)*	7.00 *(11.26)*	2099	2.31	6th (5L) Gear	173 *(78.3)*	73 *(22.8)*	83 *(28.3)*	28.940 *(97.726)*
216.30 *(161.30)*	10025 *(44.59)*	8.09 *(13.02)*	2099	1.82	7th (2H) Gear	173 *(78.3)*	73 *(22.8)*	82 *(27.8)*	28.940 *(97.726)*

LUGGING ABILITY IN 5th (4L) GEAR

Crankshaft Speed rpm	2099	1885	1675	1464	
Pull—lbs *(kN)*	15215 *(67.68)*	18512 *(82.35)*	21495 *(95.62)*	23671 *(105.29)*	At 1410 RPM the automatic transmission shifted down
Increase in Pull %	0	22	41	56	to 4th (3L) gear and the test
Power—Hp *(kW)*	224.92 *(167.72)*	243.56 *(181.63)*	249.05 *(185.71)*	237.62 *(177.19)*	was terminated.
Speed—Mph *(km/h)*	5.54 *(8.92)*	4.93 *(7.94)*	4.34 *(6.99)*	3.76 *(6.06)*	
Slip %	2.97	3.93	4.71	5.64	

TRACTOR SOUND LEVEL WITH CAB	dB(A)
Maximum Available Power—Two Hours	75.5
75% of Pull at Maximum Power—Ten Hours	75.5
50% of Pull at Maximum Power—Two Hours	75.5
50% of Pull at Reduced Engine Speed—Two Hours	74.5
Bystander in 10th (5H) Gear	104.0

Department of Agricultural Engineering

Dates of Test: August 27 to September 10, 1981

Manufacturer: STEIGER TRACTOR, INC., 1701 Westview Drive, Fargo, North Dakota 58103

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 46.3 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60°** *(15°/15°)* 0.8269 **Fuel weight** 6.885 lbs/gal *(0.825 kg/l)* **Oil SAE** 15W-40 **API service classification** CD CC SE **To motor** 7.713 gal *(29.198 l)* **Drained from motor** 6.394 gal *(24.206 l)* **Transmission lubricant** hydraulic transmission fluid type C-3 (Dextron) **Transfer case lubricant** 303 or equivalent **Hydraulic oil** SAE 10 hydraulic oil, 303 or equivalent **Final drive lubricant** SAE 85W90 **Total time engine was operated** 34.5 hours.

ENGINE: Make Cummins Diesel **Type** six cylinder vertical with turbocharger **Serial No.** 10972845 **Crankshaft** lengthwise **Rated rpm** 2100 **Bore and stroke** 5.5" × 6.0" *(139.7 mm × 152.4 mm)* **Compression ratio** 14.1 to 1 **Displacement** 855 cu in *(14013 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements with aspirator **Oil filter** one full flow cartridge and one bypass cartridge **Oil cooler** separate engine coolant heat exchangers for crankcase oil and transmission oil, separate radiators for hydraulic and transfer case oil **Fuel filter** two paper cartridges **Muffler** none **Cooling medium temperature control** one thermostat.

CHASSIS: Type four wheel dirve with duals **Serial No.** 154-00034 81 **Tread width** rear 79.0" *(2007 mm)* to 136.4" *(3464 mm)* front 79.0" *(2007 mm)* to 136.4" *(3464 mm)* **Wheel base** 132.5" *(3365 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 76.9" *(1953 mm)* Vertical distance above roadway 45.5" *(1156 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with automatic power-shift and torque converter lockup **Advertised speeds mph** *(km/h)* first 1.9 *(3.0)* second 3.4 *(5.6)* third 4.3 *(6.9)* fourth 4.4 *(7.0)* fifth 5.5 *(8.9)* sixth 6.9 *(11.1)* seventh 7.9 *(12.8)* eighth 10.0 *(16.2)* ninth 12.7 *(20.4)* tenth 15.9 *(25.6)* reverse 2.4 *(3.8)*, 5.4 *(8.7)* **Clutch** none **Brakes** multiple dry disc hydraulically operated by foot pedal or mechanically by hand lever **Steering** hydrostatic and articulated **Turning radius** (on concrete surface without brake) right 245" *(6.22 m)* left 257" *(6.53 m)* **Turning space diameter** (on concrete surface without brake) right 513" *(13.03 m)* left 537" *(13.64 m)* **Power take-off** none.

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

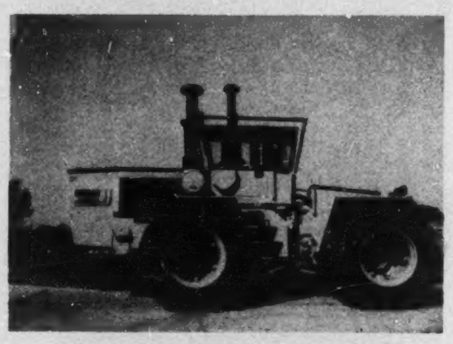
TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi *(kPa)*	Four 23.1-34; 8; inner 14 *(95)* outer 12 *(85)*	Four 23.1-34; 8; inner 14 *(95)* outer 12 *(85)*
Ballast	—Liquid (each)	None	None
	—Test Equip. (each)	155 lb *(70 kg)*	None
Front Tires	—No., size, ply & psi *(kPa)*	Four 23.1-34; 8; inner 14 *(95)* outer 12 *(85)*	Four 23.1-34; 8; inner 14 *(95)* outer 12 *(85)*
Ballast	—Liquid (each inner)	1138 lb *(516 kg)*	None
	—Cast Iron (each)	None	None
Height of Drawbar		18.5 in *(470 mm)*	18.5 in *(470 mm)*
Static Weight with Operator—Rear		13640 lb *(6187 kg)*	13020 lb *(5906 kg)*
Front		20035 lb *(9088 kg)*	17760 lb *(8056 kg)*
Total		33675 lb *(15275 kg)*	30780 lb *(13962 kg)*

REMARKS: All test results were determined from observed data obtained in accordance with SAE, ASAE and ISO test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at injection pump was maintained 135°F *(56.1°C)*. Seven gears were chosen between 15% slip and 10 mph *(16.1 km/h)*.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. 1402.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers



Steiger Cougar III PTA 280 Cummins Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska-Lincoln
Roy G. Arnold, Director

NEBRASKA TRACTOR TEST 1404—DEUTZ DX-130 DIESEL 24 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1110 rpm)								
121.27 *(90.43)*	2300	7.313 *(27.683)*	0.423 *(0.257)*	16.58 *(3.267)*	air cooled	59 *(15.0)*	75 *(23.8)*	29.290 *(98.908)*
Standard Power Take-off Speed (1000 rpm)—One Hour								
121.36 *(90.50)*	2071	6.884 *(26.059)*	0.398 *(0.242)*	17.63 *(3.473)*	air cooled	58 *(14.4)*	75 *(23.9)*	29.280 *(98.874)*
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
105.11 *(78.38)*	2345	6.524 *(24.696)*	0.435 *(0.265)*	16.11 *(3.174)*	air cooled	58 *(14.4)*	75 *(23.9)*	....
0.00 *(0.00)*	2478	1.845 *(6.984)*	....	....	air cooled	58 *(14.4)*	75 *(23.9)*	....
53.53 *(39.92)*	2390	4.118 *(15.588)*	0.539 *(0.328)*	13.00 *(2.561)*	air cooled	57 *(13.6)*	74 *(23.1)*	....
121.10 *(90.30)*	2300	7.307 *(27.660)*	0.423 *(0.257)*	16.57 *(3.265)*	air cooled	59 *(14.7)*	78 *(25.3)*	....
27.41 *(20.44)*	2434	2.932 *(11.099)*	0.750 *(0.456)*	9.35 *(1.842)*	air cooled	58 *(14.2)*	76 *(24.4)*	....
79.63 *(59.38)*	2366	5.372 *(20.335)*	0.473 *(0.288)*	14.82 *(2.920)*	air cooled	58 *(14.6)*	76 *(24.4)*	....
Av 64.48 Av *(48.07)*	2385	4.683 *(17.727)*	0.509 *(0.310)*	13.77 *(2.712)*	air cooled	58 *(14.3)*	76 *(24.2)*	29.277 *(98.863)*

DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 15th (3MH) Gear											
102.63 *(76.53)*	6460 *(28.73)*	5.96 *(9.59)*	2300	4.95	7.260 *(27.480)*	0.496 *(0.302)*	14.14 *(2.785)*	air cooled	51 *(10.6)*	65 *(18.3)*	29.330 *(99.040)*
75% of Pull at Maximum Power—Ten Hours 15th (3MH) Gear											
83.15 *(62.00)*	4985 *(22.17)*	6.25 *(10.07)*	2380	3.62	6.346 *(24.023)*	0.535 *(0.325)*	13.10 *(2.581)*	air cooled	52 *(11.2)*	64 *(18.0)*	29.220 *(98.672)*
50% of Pull at Maximum Power—Two Hours 19th (3MH) Gear											
56.86 *(42.40)*	3335 *(14.84)*	6.39 *(10.29)*	2407	2.51	5.048 *(19.108)*	0.622 *(0.378)*	11.26 *(2.219)*	air cooled	54 *(11.9)*	62 *(16.7)*	28.890 *(97.557)*
50% of Pull at Reduced Engine Speed—Two Hours 20th (2HH) Gear											
56.69 *(42.27)*	3326 *(14.80)*	6.39 *(10.28)*	1455	2.43	3.835 *(14.517)*	0.474 *(0.288)*	14.78 *(2.912)*	air cooled	61 (16.1)	74 (23.1)	28.870 *(97.490)*
MAXIMUM POWER IN SELECTED GEARS											
94.03 *(70.12)*	14406 *(64.08)*	2.45 *(3.94)*	2362	14.82	6th (1ML) Gear			air cooled	49 *(9.4)*	55 *(12.8)*	28.910 *(97.620)*
98.31 *(73.31)*	13745 *(61.14)*	2.68 *(4.32)*	2301	13.40	7th (3LH) Gear			air cooled	50 *(10.0)*	55 *(13.3)*	28.900 *(97.591)*
98.55 *(73.47)*	11965 *(53.31)*	3.08 *(4.96)*	2300	11.08	8th (1MH) Gear			air cooled	50 *(10.0)*	62 *(16.7)*	29.340 *(99.077)*
98.91 *(73.76)*	11867 *(52.79)*	3.13 *(5.03)*	2300	10.68	9th (4LL) Gear			air cooled	50 *(10.0)*	62 *(16.7)*	29.350 *(99.111)*
101.68 *(75.83)*	10441 *(46.44)*	3.65 *(5.88)*	2301	8.49	10th (2ML) Gear			air cooled	50 *(10.0)*	63 *(17.2)*	29.360 *(99.144)*
101.42 *(75.63)*	9466 *(42.11)*	4.02 *(6.47)*	2302	7.35	11th (4LH) Gear			air cooled	49 *(9.4)*	61 *(16.1)*	29.370 *(99.178)*
103.35 *(77.07)*	8365 *(37.21)*	4.63 *(7.46)*	2301	6.28	12th (2MH) Gear			air cooled	49 *(9.4)*	61 *(16.1)*	29.370 *(99.178)*
105.63 *(78.77)*	8330 *(37.05)*	4.76 *(7.65)*	2301	6.19	13th (3ML) Gear			air cooled	49 *(9.4)*	60 *(15.6)*	29.380 *(99.212)*
104.22 *(77.72)*	7005 *(31.16)*	5.58 *(8.98)*	2301	5.14	14th (1HL) Gear			air cooled	49 *(9.4)*	60 *(15.6)*	29.380 *(99.212)*
105.57 *(78.72)*	6642 *(29.55)*	5.96 *(9.59)*	2300	4.99	15th (3MH) Gear			air cooled	50 *(10.0)*	64 *(17.8)*	29.330 *(99.041)*
103.77 *(77.38)*	5712 *(25.41)*	6.81 *(10.96)*	2302	4.07	16th (4ML) Gear			air cooled	49 *(9.4)*	62 *(16.7)*	29.370 *(99.178)*
103.04 *(76.84)*	5534 *(24.62)*	6.98 *(11.24)*	2300	3.92	17th (1HH) Gear			air cooled	50 *(10.0)*	62 *(16.7)*	29.370 *(99.178)*
103.31 *(77.04)*	4791 *(21.31)*	8.09 *(13.01)*	2299	3.30	18th (2HL) Gear			air cooled	50 *(10.0)*	62 *(16.7)*	29.360 *(99.144)*

Department of Agricultural Engineering

Dates of Test: September 14-22, 1981

Manufacturer: KLOCKNER-HUMBOLDT -DEUTZ, AG 5000 Cologne 80, West Germany

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 46.3 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60°** *(15°/15°)* 0.8417 **Fuel weight** 7.008 lbs/gal *(0.840 kg/l)* **Oil SAE** 30 **API service classification** SE-SF/CC-CD **To motor** 4.910 gal *(18.588 l)* **Drained from motor** 3.504 gal *(13.263 l)* **Transmission lubricant** SAE 20W20 **Total time engine was operated** 37.0 hours

ENGINE: Make Deutz Diesel **Type** 6 cylinder vertical with turbocharger **Serial No.** 6339251 **Crankshaft** lengthwise **Rated rpm** 2300 **Bore and stroke** 4.02" × 4.92" *(102 mm × 125 mm)* **Compression ratio** 15.5 to 1 **Displacement** 374 cu in *(6128 ml)* **Starting system** 12 volt **Lubrication pressure Air cleaner** two paper elements with centrifugal precleaner **Oil filter** one paper cartridge **Oil cooler** radiator for crankcase oil, radiator for hydraulic oil, radiator for transmission oil **Fuel filter** two paper cartridges **Muffler** vertical **Cooling medium temperature control** thermo-hydraulic fan.

CHASSIS: Type standard with duals **Serial No.** 76320092 **Tread width** 63.0" *(1600 mm)* to 126" *(3200 mm)* front 63.0" *(1600 mm)* to 86.6" *(2200 mm)* **Wheel base** 105.8" *(2688 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 35.4" *(900 mm)* Vertical distance above roadway 40.2" *(1020 mm)* Horizontal distance from center of rear wheel tread 0.4" *(10 mm)* to the left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (2) range operator controlled powershift **Advertised speeds mph** *(km/h)* first 1.4 *(2.2)* second 1.7 *(2.8)* third 2.0 *(3.2)* fourth 2.4 *(3.9)* fifth 2.5 *(4.0)* sixth 2.8 *(4.5)* seventh 3.1 *(5.0)* eighth 3.5 *(5.7)* ninth 3.5 *(5.7)* tenth 4.0 *(6.4)* eleventh 4.4 *(7.0)* twelfth 4.9 *(8.0)* thirteenth 5.1 *(8.3)* fourteenth 5.9 *(9.5)* fifteenth 6.3 *(10.2)* sixteenth 7.2 *(11.5)* seventeenth 7.3 *(11.8)* eighteenth 8.4 *(13.5)* nineteenth 8.8 *(14.2)* twentieth 10.4 *(16.8)* twenty-first 10.7 *(17.3)* twenty-second 13.2 *(21.3)* twenty-third 14.9 *(24.0)* twenty-fourth 17.9 *(28.8)* reverse 3.5 *(5.6)*, 4.3 *(6.9)*, 4.9 *(8.0)*, 6.1 *(9.8)*, 6.3 *(10.1)*, 7.8 *(12.5)*, 8.8 *(14.1)*, 10.9 *(17.5)* **Clutch** dry disc hydraulically operated by foot pedal **Brakes** caliper disc hydraulically operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 161.4" *(4.1 m)* left 157.5" *(4.0 m)* (on concrete surface without brake) right 181.1" *(4.6 m)* left 189.0" *(4.8 m)* **Turning space diameter** (on concrete surface with brake applied) right 328.7" *(8.35 m)* left 324.8" *(8.25 m)* (on concrete surface without brake) right 378.0" *(9.60 m)* left 393.7" *(10.00 m)* **Power take-off** 1000 rpm at 2071 engine rpm and 540 rpm at 2071 engine rpm.

LUGGING ABILITY IN 15th (3MH) GEAR

Crankshaft Speed rpm	2300	2071	1836	1607	1384	1141
Pull—lbs *(kN)*	6642 *(29.55)*	7172 *(31.90)*	7583 *(33.73)*	8052 *(35.82)*	8213 *(36.53)*	7691 *(34.21)*
Increase in Pull %	0	8	14	21	24	16
Power—Hp *(kW)*	105.57 *(78.72)*	102.33 *(76.31)*	95.56 *(71.26)*	88.49 *(65.99)*	77.56 *(57.83)*	60.17 *(44.87)*
Speed—Mph *(km/h)*	5.96 *(9.59)*	5.35 *(8.61)*	4.73 *(7.61)*	4.12 *(6.63)*	3.54 *(5.70)*	2.93 *(4.72)*
Slip %	4.99	5.29	5.59	5.89	6.19	5.74

TRACTOR SOUND LEVEL WITH CAB	dB(A)
Maximum Available Power—Two Hours	82.5
75% of Pull at Maximum Power—Ten Hours	82.0
50% of Pull at Maximum Power—Two Hours	82.0
50% of Pull at Reduced Engine Speed—Two Hours	80.0
Bystander in 24th (4HH) gear	83.5

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi *(kPa)*	Four 18.4-38; 8; 14 *(95)*	Four 18.4-38; 8; 14 *(95)*
Ballast	—Liquid (each inner)	842 lb *(383 kg)*	None
	—Cast Iron (each inner)	770 lb *(349 kg)*	None
Front Tires	—No., size, ply & psi *(kPa)*	Two 11.00-16; 8; 40 *(275)*	Two 11.00-16; 8; 40 *(275)*
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	232 lb *(105 kg)*	None
Height of Drawbar		25.3 in *(645 mm)*	25.3 in *(645 mm)*
Static Weight with Operator—Rear		13225 lb *(5999 kg)*	10000 lb *(4536 kg)*
—Front		4405 lb *(1998 kg)*	3940 lb *(1787 kg)*
—Total		17630 lb *(7997 kg)*	13940 lb *(6323 kg)*

Deutz DX-130 Diesel

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump return was maintained at 129°F *(53.9°C)*. Thirteen gears were chosen between 15% slip and 10 mph *(16.1 km/h)*.

We, the undersigned, certify that this is a true and correct report of official Tractor Test 1404.

LOUIS I. LEVITICUS
Engineer-in Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska-Lincoln
Roy G. Arnold, Director

NEBRASKA TRACTOR TEST 1405—DEUTZ DX-120 DIESEL 15 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1158 rpm)								
111.29 (82.99)	2400	6.901 (26.123)	0.435 (0.264)	16.13 (3.177)	air cooled	59 (15.0)	75 (24.1)	29.160 (98.469)
Standard Power Take-off Speed (1000 rpm)—One Hour								
101.90 (75.99)	2072	6.214 (23.523)	0.427 (0.260)	16.40 (3.230)	air cooled	60 (15.4)	76 (24.3)	29.110 (98.300)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
97.10 (72.41)	2463	5.946 (22.508)	0.429 (0.261)	16.33 (3.217)	air cooled	60 (15.6)	76 (24.4)	....
0.00 (0.00)	2604	1.708 (6.465)	....	....	air cooled	60 (15.6)	76 (24.4)	....
49.85 (37.17)	2538	3.741 (14.161)	0.526 (0.320)	13.33 (2.625)	air cooled	60 (15.6)	76 (24.4)	....
111.94 (83.47)	2399	6.978 (26.415)	0.437 (0.266)	16.04 (3.160)	air cooled	60 (15.6)	76 (24.4)	....
25.45 (18.98)	2576	2.727 (10.323)	0.751 (0.457)	9.33 (1.839)	air cooled	60 (15.3)	75 (23.6)	....
73.98 (55.17)	2504	4.786 (18.117)	0.455 (0.276)	15.46 (3.045)	air cooled	59 (15.0)	74 (23.3)	....
Av 59.72 Av (44.53)	2514	4.314 (16.330)	0.506 (0.308)	13.84 (2.727)	air cooled	60 (15.4)	75 (24.1)	29.077 (98.188)

DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 9th (1H) Gear											
92.86 (69.25)	5787 (25.74)	6.02 (9.68)	2399	4.82	6.831 (25.860)	0.516 (0.314)	15.59 (2.678)	air cooled	62 (16.7)	78 (25.5)	28.820 (97.321)
75% of Pull at Maximum Power—Ten Hours 9th (1H) Gear											
76.40 (56.97)	4504 (20.03)	6.36 (10.24)	2507	3.70	5.669 (21.458)	0.520 (0.316)	13.48 (2.655)	air cooled	51 (10.5)	62 (16.7)	29.009 (97.959)
50% of Pull at Maximum Power—Two Hours 9th (1H) Gear											
52.59 (39.21)	3010 (13.39)	6.55 (10.54)	2548	2.49	4.370 (16.542)	0.582 (0.354)	12.03 (2.371)	air cooled	62 (16.7)	79 (26.1)	28.820 (97.321)
50% of Pull at Reduced Engine Speed—Two Hours 13th (3H) Gear											
52.28 (38.98)	2999 (13.34)	6.54 (10.52)	1459	2.69	3.478 (13.166)	0.466 (0.284)	15.03 (2.961)	air cooled	62 (16.4)	67 (19.4)	28.990 (97.895)
MAXIMUM POWER IN SELECTED GEARS											
87.95 (65.59)	12615 (56.12)	2.61 (4.21)	2448	14.98	4th (1M) Gear			air cooled	55 (12.8)	58 (14.4)	28.970 (97.827)
94.27 (70.30)	10405 (46.28)	3.40 (5.47)	2400	9.78	5th (4L) Gear			air cooled	61 (16.1)	71 (21.7)	28.810 (97.287)
94.94 (70.80)	8985 (39.97)	3.96 (6.38)	2400	7.83	6th (2M) Gear			air cooled	60 (15.6)	70 (21.1)	28.810 (97.287)
94.42 (70.41)	8229 (36.60)	4.30 (6.93)	2399	6.97	7th (5L) Gear			air cooled	59 (15.0)	69 (20.6)	28.810 (97.287)
95.93 (71.54)	7260 (32.29)	4.96 (7.97)	2400	5.94	8th (3M) Gear			air cooled	58 (14.4)	68 (20.0)	28.800 (97.253)
96.29 (71.80)	6003 (26.70)	6.01 (9.68)	2399	4.89	9th (1H) Gear			air cooled	57 (13.9)	66 (18.9)	28.890 (97.253)
97.41 (72.64)	4990 (22.20)	7.32 (11.78)	2398	3.98	10th (4M) Gear			air cooled	62 (16.7)	72 (22.2)	28.820 (97.321)
94.62 (70.56)	4077 (18.14)	8.70 (14.01)	2399	3.36	11th (2H) Gear			air cooled	62 (16.7)	73 (22.8)	28.820 (97.321)

Department of Agricultural Engineering

Dates of Test: September 17-24, 1981

Manufacturer: KLOCKNER-HUMBOLDT -DEUTZ AG, 5000 Cologne 80, West Germany

FUEL, OIL AND TIME: **Fuel** No. 2 Diesel **Cetane No.** 46.3 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60°** *(15°/15°)* 0.8417 **Fuel weight** 7.008 lbs/gal *(0.840 kg/l)* **Oil SAE** 30 **API service classification** SE-SF/CC-CD **To motor** 4.271 gal *(16.167 l)* **Drained from motor** 3.208 gal *(12.144 l)* **Transmission lubricant** SAE 20W20 **Total time engine was operated** 39.5 hours.

ENGINE: **Make** Deutz Diesel **Type** six cylinder vertical **Serial No.** 6472009 **Crankshaft** lengthwise **Rated rpm** 2400 **Bore and stroke** 4.02" × 4.92" *(102 mm × 125 mm)* **Compression ratio** 17 to 1 **Displacement** 374 cu in *(6128 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** one paper element, one felt element and centrifugal precleaner **Oil filter** one paper cartridge **Oil cooler** radiator for crankcase oil, radiator for hydraulic oil **Fuel filter** two paper cartridges **Muffler** vertical **Cooling medium temperature control** thermo hydraulic fan.

CHASSIS: **Type** standard with duals **Serial No.** 7626 0169 **Tread width** rear 63" *(1600 mm)* to 126" *(3200 mm)* front 63" *(1600 mm)* to 86.6" *(2200 mm)* **Wheel base** 105.8" *(2688 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 36.5" *(928 mm)* Vertical distance above roadway 39.3" *(997 mm)* Horizontal distance from center of rear wheel tread 0.4" *(10 mm)* to the left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph (km/h)** first 1.4 *(2.2)* second 2.1 *(3.4)* third 2.6 *(4.2)* fourth 2.8 *(4.5)* fifth 3.8 *(6.1)* sixth 4.3 *(6.9)* seventh 4.6 *(7.4)* eighth 5.3 *(8.5)* ninth 5.9 *(9.5)* tenth 7.7 *(12.3)* eleventh 8.7 *(13.9)* twelfth 9.4 *(15.1)* thirteenth 11.1 *(17.8)* fourteenth 16.0 *(25.8)* fifteenth 19.7 *(31.7)* reverse 3.5 *(5.6)*, 5.3 *(8.5)*, 6.5 *(10.4)*, 9.4 *(15.1)*, 11.5 *(18.6)* **Clutch** dry disc operated by foot pedal **Brakes** caliper disc hydraulically operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 161.4" *(4.1 m)* left 157.5" *(4.0 m)* (on concrete surface without brake) right 181.1" *(4.6 m)* left 189.0" *(4.8 m)* **Turning space diameter** (on concrete surface with brake applied) right 328.7" *(8.35 m)* left 324.8" *(8.25 m)* (on concrete surface without brake) right 378.0" *(9.60 m)* left 393.7" *(10.00 m)* **Power take-off** 1000 rpm at 2072 engine rpm and 540 rpm at 2071 engine rpm.

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

LUGGING ABILITY IN 9th (1H) GEAR

Crankshaft Speed rpm	2399	2158	1905	1680	1435	1194
Pull—lbs (kN)	6003 (26.70)	6414 (28.53)	6677 (29.70)	6721 (29.90)	6788 (30.20)	6584 (29.29)
Increase in Pull %	0	7	11	12	13	10
Power—Hp (kW)	96.29 (71.80)	92.21 (68.76)	84.51 (63.02)	74.97 (55.91)	64.60 (48.17)	52.24 (38.96)
Speed—Mph (km/h)	6.01 (9.68)	5.39 (8.68)	4.75 (7.64)	4.18 (6.73)	3.57 (5.74)	2.98 (4.79)
Slip %	4.89	5.20	5.50	5.50	5.50	5.50

TRACTOR SOUND LEVEL WITH CAB	dB(A)
Maximum Available Power—Two Hours	85.0
75% of Pull at Maximum Power—Ten Hours	84.5
50% of Pull at Maximum Power—Two Hours	85.0
50% of Pull at Reduced Engine Speed—Two Hours	80.5
Bystander in 15th (5H) gear	88.0

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi (kPa)	Four 18.4-38; 8; 12 (83)	Four 18.4-38; 8; 12 (83)
Ballast	—Liquid (each inner)	910 lb (413 kg)	None
	—Cast Iron (each)	None	None
Front Tires	—No., size, ply & psi (kPa)	Two 11.00-16; 6; 32 (220)	Two 11.00-16; 6; 32 (220)
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	80 lb (36 kg)	None
Height of Drawbar		24.5 in (620 mm)	24.5 in (620 mm)
Static Weight with Operator—Rear		11240 lb (5098 kg)	9420 lb (4273 kg)
—Front		3710 lb (1683 kg)	3550 lb (1610 kg)
—Total		14950 lb (6781 kg)	12970 lb (5883 kg)

Deutz DX-120 Diesel

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump was maintained at 154°F *(67.8°C)*. Eight gears were chosen between 15% slip and 10 mph *(16.1 km/h)*.

We, the undersigned, certify that this is a true and correct report of official Tractor Test 1405.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska-Lincoln
Roy G. Arnold, Director

NEBRASKA TRACTOR TEST 1406 — KUBOTA L235 4WD DIESEL
ALSO KUBOTA L235 DIESEL
8 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—578 rpm)								
19.59 (14.61)	2600	1.382 (5.231)	0.495 (0.301)	14.17 (2.793)	196 (92.0)	62 (16.7)	75 (23.9)	29.020 (97.996)
Standard Power take-off Speed (540 rpm)—One Hour								
19.63 (14.64)	2430	1.370 (5.186)	0.489 (0.298)	14.33 (2.823)	197 (91.7)	62 (16.7)	75 (23.8)	29.000 (97.929)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
17.06 (12.72)	2668	1.224 (4.633)	0.503 (0.306)	13.94 (2.746)	188 (86.4)	62 (16.7)	75 (23.9)	....
0.00 (0.00)	2867	0.467 (1.768)	....	....	182 (83.3)	62 (16.7)	75 (23.9)	....
8.83 (6.58)	2760	0.813 (3.078)	0.646 (0.393)	10.85 (2.138)	185 (84.7)	62 (16.7)	75 (23.6)	....
19.88 (14.82)	2601	1.421 (5.379)	0.501 (0.305)	13.99 (2.755)	195 (90.3)	63 (17.2)	75 (23.6)	....
4.48 (3.34)	2800	0.638 (2.415)	0.997 (0.607)	7.03 (1.383)	183 (83.9)	63 (16.9)	75 (23.6)	....
12.99 (9.69)	2707	1.015 (3.842)	0.547 (0.333)	12.81 (2.522)	188 (86.4)	63 (17.2)	75 (23.9)	....
Av 10.54 Av (7.86)	2734	0.930 (3.520)	0.618 (0.376)	11.34 (2.233)	187 (85.8)	62 (16.9)	75 (23.8)	28.980 (97.591)

DRAWBAR PERFORMANCE
(Front Wheel Drive Disengaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 6th Gear											
15.36 (11.45)	1230 (5.47)	4.68 (7.54)	2600	7.07	1.356 (5.131)	0.618 (0.376)	11.33 (2.232)	184 (84.4)	70 (20.8)	76 (24.4)	28.785 (97.203)
75% of Pull at Maximum Power—Ten Hours 6th Gear											
12.74 (9.50)	967 (4.30)	4.94 (7.95)	2697	5.50	1.174 (4.443)	0.646 (0.393)	10.85 (2.138)	179 (81.7)	57 (14.0)	68 (19.9)	28.843 (97.398)
50% of Pull at Maximum Power—Two Hours 6th Gear											
8.73 (6.51)	641 (2.85)	5.10 (8.21)	2751	4.31	0.945 (3.579)	0.759 (0.462)	9.23 (1.818)	176 (80.0)	51 (10.6)	61 (16.1)	29.108 (98.293)
50% of Pull at Reduced Engine Speed—Two Hours 7th Gear											
8.74 (6.52)	639 (2.84)	5.13 (8.26)	1624	3.99	0.767 (2.903)	0.615 (0.374)	11.40 (2.245)	176 (80.0)	57 (13.9)	70 (21.1)	29.035 (98.047)
MAXIMUM POWER IN SELECTED GEARS											
15.41 (11.49)	2440 (10.85)	2.37 (3.81)	2614	14.52	4th Gear			183 (83.6)	61 (16.1)	75 (23.9)	28.900 (97.794)
15.48 (11.54)	2004 (8.91)	2.90 (4.66)	2597	11.69	5th Gear			182 (83.3)	67 (19.4)	71 (21.7)	28.810 (97.287)
16.05 (11.97)	1285 (5.72)	4.68 (7.54)	2598	7.05	6th Gear			181 (82.8)	65 (18.3)	66 (18.9)	28.820 (97.321)
14.88 (11.10)	677 (3.01)	8.24 (13.27)	2599	3.69	7th Gear			181 (82.8)	65 (18.3)	69 (20.6)	28.820 (97.321)

LUGGING ABILITY IN 6th GEAR

Crankshaft Speed rpm	2598	2342	2067	1832	1555	1301
Pull—lbs (kN)	1285 (5.72)	1424 (6.33)	1543 (6.86)	1600 (7.12)	1608 (7.15)	1591 (7.08)
Increase in Pull %	0	11	20	25	25	24
Power—Hp (kW)	16.05 (11.97)	15.90 (11.86)	15.10 (11.26)	13.81 (10.30)	11.78 (8.78)	9.76 (7.28)
Speed—Mph (km/h)	4.68 (7.54)	4.19 (6.74)	3.67 (5.91)	3.24 (5.21)	2.75 (4.42)	2.30 (3.70)
Slip %	7.05	7.78	8.45	8.79	8.95	8.87

Department of Agricultural Engineering

Dates of Test: September 17-30, 1981

Manufacturer: KUBOTA LTD, 2-47 Shikitsu-higashi, 1-chome, Naniwa-ku, Osaka, Japan

FUEL, OIL AND TIME: **Fuel** No. 2 Diesel **Cetane No.** 46.3 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60°** *(15°/15°)* 0.8417 **Fuel weight** 7.008 lbs/gal *(0.840 kg/l)* **Oil SAE** 20-20W **API service classification** SB/SE-CA/CD **To motor** 1.231 gal *(4.659 l)* **Drained from motor** 1.135 gal *(4.295 l)* **Transmission and hydraulic lubricant** SAE 20 hydraulic transmission fluid **Front axle lubricant** SAE 80 **Total time engine was operated** 42.5 hours.

ENGINE: **Make** Kubota Diesel **Type** three cylinder vertical **Serial No.** D1102-A-01439 **Crankshaft** lengthwise **Rated rpm** 2600 **Bore and stroke** 3.0" × 3.23" *(76 mm × 82 mm)* **Compression ratio** 21 to 1 **Displacement** 68 cu in *(1115 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** one paper element **Oil filter** one full flow paper cartridge **Fuel filter** one paper element **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: **Type** front wheel assist **Serial No.** L235DT-10194 **Tread width** rear 40.0" *(1015 mm)* to 44.7" *(1135 mm)* front 39.4" *(1000 mm)* **Wheel base** 64.6" *(1640 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 31.1" *(790 mm)* Vertical distance above roadway 29.3" *(745 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph *(km/h)*** first 0.8 *(1.3)* second 1.3 *(2.1)* third 2.2 *(3.5)* fourth 2.9 *(4.7)* fifth 3.5 *(5.6)* sixth 5.3 *(8.5)* seventh 9.0 *(14.5)* eighth 12.1 *(19.4)* reverse 0.8 *(1.2)*, 1.2 *(1.8)*, 1.9 *(3.1)*, 2.6 *(4.2)*, 3.1 *(5.0)*, 4.8 *(7.7)*, 8.1 *(13.0)* **Clutch** single dry disc operated by foot pedal **Brakes** wet disc operated by two foot pedals which can be locked together **Steering** mechanical **Turning radius** (on concrete surface with brake applied) right 106" *(2.7 m)* left 106" *(2.7 m)* (on concrete surface without brake) right 122" *(3.1 m)* left 122" *(3.1 m)* **Turning space diameter** (on concrete surface with brake applied) right 217" *(5.5 m)* left 217" *(5.5 m)* (on concrete surface without brake) right 244" *(6.2 m)* left 244" *(6.2 m)* **Power take-off** 540 rpm at 2450 engine rpm.

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

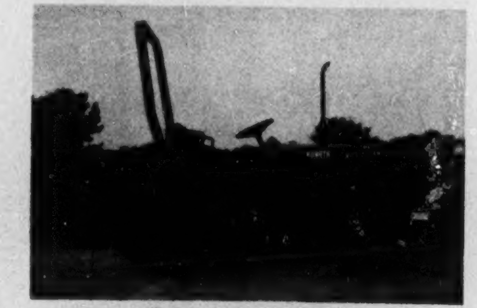
REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump inlet was maintained at 143°F *(61.4°C)*. Four gears were chosen between 15% slip and 10 mph *(16.1 km/h)*.

TRACTOR SOUND LEVEL WITHOUT CAB	dB(A)	Front Wheel Drive Disengaged dB(A)
Maximum Available Power—Two Hours	91.0	90.0
75% of Pull at Maximum Power—Ten Hours		90.5
50% of Pull at Maximum Power—Two Hours		89.0
50% of Pull at Reduced Engine Speed—Two Hours		84.0
Bystander in 8th gear		77.0

DRAWBAR PERFORMANCE
(Front Wheel Drive Engaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 6th Gear											
15.28 (11.39)	1180 (5.25)	4.85 (7.81)	2598	5.19	1.391 (5.267)	0.638 (0.388)	10.98 (2.163)	183 (83.9)	70 (21.1)	77 (24.7)	28.750 (97.084)
MAXIMUM POWER IN SELECTED GEARS											
14.92 (11.13)	3065 (13.63)	1.83 (2.94)	2666	14.97	3rd Gear			178 (81.1)	45 (7.2)	50 (10.0)	29.120 (98.334)
16.02 (11.95)	1240 (5.51)	4.85 (7.80)	2597	5.26	6th Gear			181 (82.8)	65 (18.3)	68 (20.0)	28.820 (97.321)

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi *(kPa)*	Two 9.5-24; 4; 14 *(95)*	Two 9.5-24; 4; 14 *(95)*
Ballast	—Liquid (each)	180 lb *(82 kg)*	None
	—Cast Iron (each)	338 lb *(153 kg)*	None
Front Tires	—No., size, ply & psi *(kPa)*	Two 6-14; 4; 28 *(195)*	Two 6-14; 4; 28 *(195)*
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	122 lb *(55 kg)*	None
Height of Drawbar		15 in *(380 mm)*	15 in *(380 mm)*
Static Weight with Operator—Rear		2445 lb *(1109 kg)*	1410 lb *(640 kg)*
Front		1270 lb *(576 kg)*	1025 lb *(465 kg)*
Total		3715 lb *(1685 kg)*	2435 lb *(1105 kg)*



Kubota L235 4WD Diesel

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. 1406.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska-Lincoln
Roy G. Arnold, Director

NEBRASKA TRACTOR TEST 1407 — KUBOTA L275 4WD DIESEL
ALSO KUBOTA L275 DIESEL
8 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—582 rpm)								
23.42 (17.46)	2600	1.649 (6.242)	0.495 (0.300)	14.21 (2.797)	214 (101.2)	68 (20.1)	75 (23.8)	28.977 (97.856)
Standard Power Take-off Speed (540 rpm)—One Hour								
23.01 (17.16)	2412	1.580 (5.981)	0.481 (0.293)	14.57 (2.869)	214 (101.3)	68 (20.0)	75 (24.1)	28.935 (97.709)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
20.50 (15.29)	2678	1.468 (5.557)	0.502 (0.305)	13.96 (2.751)	205 (96.1)	68 (20.0)	75 (23.9)	....
0.00 (0.00)	2862	0.527 (1.995)	....	....	183 (83.9)	68 (20.0)	75 (23.9)	....
10.55 (7.87)	2752	0.946 (3.581)	0.628 (0.382)	11.15 (2.196)	187 (85.8)	68 (19.7)	75 (23.9)	....
23.55 (17.55)	2601	1.670 (6.322)	0.497 (0.302)	14.09 (2.776)	212 (100.0)	69 (20.6)	75 (23.9)	....
5.34 (3.98)	2795	0.723 (2.737)	0.949 (0.577)	7.39 (1.454)	185 (84.7)	69 (20.3)	75 (23.9)	....
15.64 (11.66)	2724	1.211 (4.584)	0.543 (0.330)	12.91 (2.544)	189 (87.2)	69 (20.6)	75 (23.9)	....
Av 12.59 Av (9.39)	2735	1.091 (4.130)	0.607 (0.369)	11.54 (2.274)	193 (89.4)	68 (20.2)	75 (23.9)	28.903 (97.601)

DRAWBAR PERFORMANCE
(Front Wheel Drive Disengaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 6th Gear											
18.86 (14.07)	1462 (6.50)	4.84 (7.79)	2591	7.48	1.623 (6.144)	0.603 (0.367)	11.62 (2.289)	195 (90.6)	54 (11.9)	68 (19.7)	29.070 (98.165)
75% of Pull at Maximum Power—Ten Hours 6th Gear											
15.68 (11.69)	1146 (5.10)	5.13 (8.26)	2610	5.46	1.416 (5.361)	0.633 (0.385)	11.07 (2.181)	183 (83.9)	62 (16.9)	70 (21.2)	28.756 (97.105)
50% of Pull at Maximum Power—Two Hours 6th Gear											
10.85 (8.09)	768 (3.42)	5.29 (8.51)	2728	3.62	1.088 (4.119)	0.704 (0.428)	9.96 (1.960)	180 (82.2)	69 (20.6)	85 (29.2)	28.745 (97.068)
50% of Pull at Reduced Engine Speed—Two Hours 7th Gear											
10.82 (8.07)	767 (3.41)	5.29 (8.51)	1602	3.33	0.856 (3.241)	0.555 (0.337)	12.65 (2.489)	193 (89.2)	71 (21.4)	90 (31.8)	28.720 (96.983)
MAXIMUM POWER IN SELECTED GEARS											
18.09 (13.49)	2717 (12.09)	2.50 (4.02)	2660	14.88	4th Gear			180 (81.9)	49 (9.4)	56 (13.3)	29.060 (98.131)
18.99 (14.16)	2395 (10.65)	2.97 (4.78)	2590	12.76	5th Gear			190 (87.5)	51 (10.6)	62 (16.7)	29.080 (98.199)
19.70 (14.69)	1526 (6.79)	4.84 (7.79)	2601	7.53	6th Gear			187 (85.8)	51 (10.6)	58 (14.4)	29.070 (98.165)
18.78 (14.00)	828 (3.68)	8.50 (13.68)	2599	4.22	7th Gear			183 (83.9)	52 (11.1)	63 (17.2)	29.090 (98.233)

LUGGING ABILITY IN 6th GEAR

Crankshaft Speed rpm	2601	2331	2080	1827	1550	1308
Pull—lbs (kN)	1526 (6.79)	1682 (7.48)	1790 (7.96)	1877 (8.35)	1906 (8.47)	1870 (8.32)
Increase in Pull %	0	10	17	23	25	23
Power—Hp (kW)	19.70 (14.69)	19.30 (14.39)	18.15 (13.54)	16.65 (12.41)	14.31 (10.67)	11.88 (8.86)
Speed—Mph (km/h)	4.84 (7.79)	4.30 (6.92)	3.80 (6.12)	3.33 (5.35)	2.82 (4.53)	2.38 (3.83)
Slip %	7.53	8.23	9.10	9.32	9.60	9.32

Department of Agricultural Engineering

Dates of Test: September 17 to October 2, 1981

Manufacturer: KUBOTA LTD, 2-47 Shikitsu higashi, 1-chome, Naniwa-ku, Osaka, Japan

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 46.3 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60°** *(15°/15°)* 0.8417 **Fuel weight** 7.008 lbs/gal *(0.840 kg/l)* **Oil SAE** 20-20W **API service classification** SB/SE-CA/CD **To motor** 1.232 gal *(4.664 l)* **Drained from motor** 1.101 gal *(4.169 l)* **Transmission and hydraulic lubricant** SAE 20 hydraulic transmission oil **Front axle lubricant** SAE 80 **Total time engine was operated** 48.5 hours.

ENGINE: Make Kubota Diesel **Type** three cylinder vertical **Serial No.** D1302-A-01544 **Crankshaft** lengthwise **Rated rpm** 2600 **Bore and stroke** 3.23" × 3.23" *(82 mm × 82 mm)* **Compression ratio** 21 to 1 **Displacement** 79.3 cu in *(1299 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** one paper element **Oil filter** one full flow cartridge **Fuel filter** one paper element **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: Type front wheel assist **Serial No.** L275DT-10209 **Tread width** rear 40.6" *(1030 mm)* to 55.1" *(1400 mm)* front 43.3" *(1100 mm)* **Wheel base** 64.6" *(1640 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 29.9" *(760 mm)* Vertical distance above roadway 29.1" *(740 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph (km/h)** first 0.9 *(1.4)* second 1.3 *(2.1)* third 2.2 *(3.6)* fourth 3.0 *(4.8)* fifth 3.6 *(5.8)* sixth 5.5 *(8.8)* seventh 9.3 *(15.0)* eighth 12.4 *(20.0)* reverse 0.8 *(1.2)*, 1.2 *(1.9)*, 2.0 *(3.2)*, 2.7 *(4.3)*, 3.2 *(5.2)*, 4.9 *(7.9)*, 8.4 *(13.5)* **Clutch** dual plate dry disc operated by foot pedal **Brakes** wet disc operated by two foot pedals which can be locked together **Steering** mechanical **Turning radius** (on concrete surface with brake applied) right 106" *(2.7 m)* left 106" *(2.7 m)* (on concrete surface without brake) right 122" *(3.1 m)* left 122" *(3.1 m)* **Turning space diameter** (on concrete surface with brake applied) right 217" *(5.5 m)* left 217" *(5.5 m)* (on concrete surface without brake) right 256" *(6.5 m)* left 256" *(6.5 m)* **Power take-off** 540 rpm at 2412 engine rpm.

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump inlet was maintained at 148°F *(64.5°C)*. Four gears were chosen between 15% slip and 10 mph *(16.1 km/h)*.

TRACTOR SOUND LEVEL WITHOUT CAB	dB(A)	Front Wheel Drive Disengaged dB(A)
Maximum Available Power—Two Hours	91.5	89.5
75% of Pull at Maximum Power—Ten Hours		89.0
50% of Pull at Maximum Power—Two Hours		88.5
50% of Pull at Reduced Engine Speed—Two Hours		85.0
Bystander in 8th gear		77.0

DRAWBAR PERFORMANCE
(Front Wheel Drive Engaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 6th Gear											
18.57 (13.85)	1382 (6.15)	5.04 (8.11)	2598	5.48	1.623 (6.144)	0.613 (0.373)	11.44 (2.253)	197 (91.7)	54 (12.2)	70 (20.8)	29.045 (98.081)
MAXIMUM POWER IN SELECTED GEARS											
16.86 (12.57)	3308 (14.69)	1.91 (3.08)	2083	14.91	3rd Gear			179 (81.4)	46 (7.8)	50 (10.0)	29.040 (98.064)
19.34 (14.42)	1440 (6.41)	5.04 (8.10)	2597	5.56	6th Gear			184 (84.2)	51 (10.6)	61 (16.1)	29.080 (98.199)

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi (kPa)	Two 11.2-24; 4; 14 (97)	Two 11.2-24; 4; 14 (97)
Ballast	—Liquid (each)	200 lb (91 kg)	None
	—Cast Iron (each)	330 lb (149 kg)	None
Front Tires	—No., size, ply & psi (kPa)	Two 7-10; 4; 26 (180)	Two 7-10; 4; 26 (180)
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	185 lb (84 kg)	None
Height of Drawbar		15 in (380 mm)	15 in (380 mm)
Static Weight with Operator—Rear		2615 lb (1186 kg)	1555 lb (705 kg)
Front		1440 lb (653 kg)	1070 lb (485 kg)
Total		4055 lb (1839 kg)	2625 lb (1190 kg)

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. 1407.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

Kubota L275 4WD Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Roy G. Arnold, Director

NEBRASKA TRACTOR TEST 1409 — HESSTON 1380 DT FIAT DIESEL
ALSO HESSTON 1380 FIAT DIESEL
ALSO HESSTON 1380 DT TURBO FIAT DIESEL
AND HESSTON 1380 TURBO FIAT DIESEL
12 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1034 rpm)								
123.16 (91.84)	2400	7.621 (28.849)	0.427 (0.260)	16.16 (3.183)	193 (89.4)	55 (12.7)	75 (23.9)	29.087 (98.221)
Standard Power Take-off Speed (1000 rpm)—One Hour								
123.54 (92.12)	2320	7.493 (28.364)	0.418 (0.254)	16.49 (3.248)	193 (89.5)	55 (12.8)	75 (23.9)	29.060 (98.131)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
106.91 (79.72)	2451	6.812 (25.786)	0.439 (0.267)	15.70 (3.092)	191 (88.3)	56 (13.1)	75 (23.9)	....
0.00 (0.00)	2594	2.162 (8.184)	....	....	183 (83.9)	55 (12.8)	74 (23.3)	....
55.20 (41.16)	2536	4.385 (16.599)	0.548 (0.333)	12.59 (2.480)	185 (85.0)	55 (12.8)	74 (23.3)	....
123.77 (92.30)	2400	7.621 (28.849)	0.425 (0.258)	16.24 (3.199)	193 (89.2)	55 (12.8)	74 (23.3)	....
27.76 (20.70)	2552	3.193 (12.087)	0.793 (0.482)	8.70 (1.713)	183 (83.9)	55 (12.8)	74 (23.3)	....
81.50 (60.77)	2480	5.529 (20.926)	0.468 (0.285)	14.74 (2.904)	190 (87.6)	55 (12.8)	75 (23.6)	....
Av 65.86 Av (49.11)	2502	4.950 (18.738)	0.518 (0.315)	13.30 (2.621)	187 (86.3)	55 (12.8)	74 (23.5)	29.085 (97.940)

DRAWBAR PERFORMANCE
(Front Wheel Drive Disengaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 7th (M3) Gear											
101.54 (75.72)	7666 (34.10)	4.97 (7.99)	2400	6.53	7.467 (28.266)	0.507 (0.309)	13.60 (2.679)	187 (86.1)	51 (10.6)	63 (17.2)	29.200 (98.604)
75% of Pull at Maximum Power—Ten Hours 7th (M3) Gear											
82.20 (61.30)	5886 (26.18)	5.24 (8.43)	2480	4.50	6.318 (23.916)	0.530 (0.322)	13.01 (2.563)	183 (83.9)	47 (8.3)	57 (13.7)	29.078 (98.192)
50% of Pull at Maximum Power—Two Hours 7th (M3) Gear											
56.45 (42.10)	3929 (17.48)	5.39 (8.67)	2515	3.21	4.857 (18.386)	0.593 (0.361)	11.62 (2.290)	179 (81.7)	48 (8.6)	57 (13.9)	28.870 (97.490)
50% of Pull at Reduced Engine Speed—Two Hours 9th (H1) Gear											
56.51 (42.14)	3929 (17.48)	5.39 (8.68)	1594	3.13	3.734 (14.133)	0.456 (0.277)	15.14 (2.982)	181 (82.5)	50 (10.0)	62 (16.7)	28.815 (97.304)
MAXIMUM POWER IN SELECTED GEARS											
85.48 (63.74)	13106 (58.29)	2.45 (3.94)	2450	14.86	4th (L4) Gear			179 (81.4)	41 (5.0)	44 (6.7)	28.880 (97.523)
98.96 (73.80)	12100 (53.82)	3.07 (4.94)	2398	12.02	5th (M1) Gear			185 (84.7)	44 (6.7)	50 (10.0)	28.900 (97.594)
103.62 (77.27)	9634 (42.85)	4.03 (6.49)	2400	8.12	6th (M2) Gear			187 (86.1)	50 (10.0)	58 (14.4)	29.260 (98.807)
104.14 (77.66)	7843 (34.89)	4.98 (8.01)	2399	6.18	7th (M3) Gear			186 (85.6)	47 (8.3)	53 (11.7)	29.240 (98.739)
104.44 (77.88)	6433 (28.61)	6.09 (9.80)	2400	4.95	8th (M4) Gear			187 (86.1)	50 (10.0)	59 (15.0)	29.250 (98.773)
104.97 (78.27)	4873 (21.68)	8.08 (13.00)	2400	3.09	9th (H1) Gear			187 (85.8)	51 (10.6)	61 (16.1)	29.230 (98.705)

Department of Agricultural Engineering

Dates of Test: September 30 to October 9, 1981

Manufacturer: FIAT TRATTORI S.p.A. Via Pico della Mirandola 72-41100, Modena, Italy

FUEL, OIL AND TIME: **Fuel** No. 2 Diesel **Cetane No.** 45.3 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60°** *(15°/15°)* 0.8283 **Fuel weight** 6.897 lbs/gal *(0.827 kg/l)* **Oil SAE** 30 **API service classification** SE-SF/CC-CD **To motor** 3.431 gal *(12.986 l)* **Drained from motor** 3.158 gal *(11.954 l)* **Transmission lubricant** SAE 20W-40 **Final drive lubricant** API 305 **Total time engine was operated** 41.5 hours.

ENGINE: **Make** Fiat Diesel **Type** six cylinder vertical with turbocharger **Serial No.** 8065.24*000-206434* **Crankshaft** lengthwise **Rated rpm** 2400 **Bore and stroke** 4.055" × 4.33" *(103 mm × 110 mm)* **Compression ratio** 16.5 to 1 **Displacement** 335 cu in *(5499 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements with centrifugal precleaner **Oil filter** two paper cartridges **Oil cooler** engine coolant heat exchanger for crankcase oil **Fuel filter** two paper cartridges with sediment bowl **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: **Type** front wheel assist with duals **Serial No.** 1380 DT/12*755909* **Tread width** rear 64.6" *(1640 mm)* to 118.5" *(3010 mm)* front 70.9" *(1800 mm)* to 88.0" *(2235 mm)* **Wheel base** 105.2" *(2672 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 34.6" *(880 mm)* Vertical distance above roadway 42.5" *(1080 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph** *(km/h)* first 1.5 *(2.4)* second 1.9 *(3.1)* third 2.3 *(3.7)* fourth 2.8 *(4.5)* fifth 3.4 *(5.6)* sixth 4.4 *(7.0)* seventh 5.3 *(8.5)* eighth 6.3 *(10.2)* ninth 8.3 *(13.4)* tenth 10.5 *(16.8)* eleventh 12.6 *(20.4)* twelfth 15.3 *(24.6)* reverse 3.5 *(5.7)*, 4.4 *(7.1)*, 5.4 *(8.6)*, 6.5 *(10.4)* **Clutch** single dry disc operated by foot pedal **Brakes** multiple wet disc hydraulically operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 202" *(5.14 m)* left 204" *(5.18 m)* (on concrete surface without brake) right 241" *(6.13 m)* left 241" *(6.13 m)* **Turning space diameter** (on concrete surface with brake applied) right 419" *(10.66 m)* left 423" *(10.74 m)* (on concrete surface without brake) right 497" *(12.62 m)* left 497" *(12.62 m)* **Power take-off** 1000 rpm at 2320 engine rpm and 540 rpm at 2095 engine rpm.

LUGGING ABILITY IN 7th (M3) GEAR

Crankshaft Speed rpm	2399	2162	1917	1686	1441	1195
Pull—lbs (kN)	7843 (34.89)	8631 (38.39)	9099 (40.47)	9405 (41.84)	9387 (41.76)	8821 (39.24)
Increase in Pull %	0	10	16	20	20	12
Power—Hp (kW)	104.14 (77.66)	102.40 (76.36)	95.19 (70.98)	86.17 (64.26)	73.50 (54.81)	57.64 (42.98)
Speed—Mph (km/h)	4.98 (8.01)	4.45 (7.16)	3.92 (6.31)	3.44 (5.53)	2.94 (4.73)	2.45 (3.94)
Slip %	6.18	6.94	7.38	7.97	7.97	7.38

TRACTOR SOUND LEVEL WITH CAB	dB(A)	Front Wheel Drive Disengaged dB(A)
Maximum Available Power—Two Hours	78.0	78.5
75% of Pull at Maximum Power—Ten Hours		79.0
50% of Pull at Maximum Power—Two Hours		78.0
50% of Pull at Reduced Engine Speed—Two Hours		73.5
Bystander in 12th (H4) gear		89.5

DRAWBAR PERFORMANCE
(Front Wheel Drive Engaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 7th (M3) Gear											
102.45 (76.40)	7575 (33.69)	5.07 (8.16)	2400	4.64	7.503 (28.403)	0.505 (0.307)	13.65 (2.690)	187 (85.8)	52 (11.1)	65 (18.3)	29.155 (98.452)
MAXIMUM POWER IN SELECTED GEARS											
84.81 (63.24)	15641 (69.58)	2.03 (3.27)	2461	14.85	3rd (L3) Gear			179 (81.7)	43 (6.1)	48 (8.9)	28.890 (97.557)
105.47 (78.65)	7791 (34.66)	5.08 (8.17)	2398	4.53	7th (M3) Gear			187 (86.1)	49 (9.4)	56 (13.3)	29.250 (98.773)

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi *(kPa)*	Four 18.4-38; 8; 14 *(95)*	Four 18.4-38; 8; 14 *(95)*
Ballast	—Liquid (each)	None	None
	—Cast Iron (each inner)	770 lb *(349 kg)*	None
Front Tires	—No., size, ply & psi *(kPa)*	Two 14.9-28; 6; 20 *(140)*	Two 14.9-28; 6; 20 *(140)*
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	128 lb *(58 kg)*	None
Height of Drawbar		20 in *(510 mm)*	20 in *(510 mm)*
Static Weight with Operator	—Rear	11740 lb *(5325 kg)*	10200 lb *(4627 kg)*
	Front	5255 lb *(2384 kg)*	5000 lb *(2268 kg)*
	Total	16995 lb *(7709 kg)*	15200 lb *(6895 kg)*

Hesston 1380 DT Fiat Diesel

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump return was maintained at 141°F *(60.4°C)*. Six gears were chosen between 15% slip and 10 mph *(16.1 km/h)*.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. 1409.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
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Board of Tractor Test Engineers

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
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Roy G. Arnold, Director

NEBRASKA TRACTOR TEST 1410 — HESSTON 1880 DT FIAT DIESEL
ALSO HESSTON 1880 FIAT DIESEL
ALSO HESSTON 1880 DT TURBO FIAT DIESEL
AND HESSTON 1880 TURBO FIAT DIESEL
12 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1061 rpm)								
162.48 *(121.16)*	2200	9.626 *(36.438)*	0.409 *(0.249)*	16.88 *(3.325)*	182 *(83.4)*	63 *(17.2)*	75 *(23.8)*	28.917 *(97.647)*
Standard Power Take-off Speed (1000 rpm)—One Hour								
159.83 *(119.19)*	2074	9.213 *(34.875)*	0.398 *(0.242)*	17.35 *(3.418)*	183 *(83.8)*	62 *(16.7)*	75 *(23.9)*	28.960 *(97.794)*
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
141.18 *(105.28)*	2248	8.625 *(32.649)*	0.421 *(0.256)*	16.37 *(3.225)*	182 *(83.3)*	62 *(16.7)*	75 *(23.9)*	....
0.00 *(0.00)*	2418	2.732 *(10.342)*	....	....	180 *(82.2)*	62 *(16.7)*	75 *(23.9)*	....
73.55 *(54.85)*	2346	5.585 *(21.142)*	0.524 *(0.319)*	13.17 *(2.594)*	181 *(82.8)*	62 *(16.7)*	75 *(23.9)*	....
163.75 *(122.11)*	2200	9.636 *(36.472)*	0.406 *(0.247)*	17.00 *(3.348)*	183 *(83.6)*	63 *(16.9)*	76 *(24.2)*	....
37.45 *(27.93)*	2382	4.158 *(15.740)*	0.766 *(0.466)*	9.01 *(1.774)*	180 *(82.2)*	62 *(16.7)*	75 *(23.9)*	....
108.39 *(80.83)*	2300	7.068 *(26.755)*	0.450 *(0.274)*	15.33 *(3.021)*	182 *(83.1)*	62 *(16.7)*	75 *(23.9)*	....
Av 87.39 *Av (65.17)*	2315	6.301 *(23.852)*	0.497 *(0.302)*	13.87 *(2.732)*	181 *(82.9)*	62 *(16.7)*	75 *(23.9)*	28.900 *(97.861)*

DRAWBAR PERFORMANCE
(Front Wheel Drive Disengaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 7th (M3) Gear											
135.64 *(101.14)*	9360 *(41.63)*	5.43 *(8.75)*	2201	5.92	9.334 *(35.332)*	0.475 *(0.289)*	14.53 *(2.863)*	173 *(78.3)*	59 *(14.7)*	59 *(14.7)*	28.730 *(97.017)*
75% of Pull at Maximum Power—Ten Hours 7th (M3) Gear											
109.88 *(81.94)*	7181 *(31.94)*	5.74 *(9.23)*	2289	4.49	8.090 *(30.626)*	0.508 *(0.309)*	13.58 *(2.676)*	178 *(81.1)*	52 *(11.1)*	55 *(12.6)*	28.659 *(96.777)*
50% of Pull at Maximum Power—Two Hours 7th (M3) Gear											
76.59 *(57.12)*	4818 *(21.43)*	5.96 *(9.60)*	2335	2.53	6.343 *(24.012)*	0.571 *(0.347)*	12.07 *(2.379)*	175 *(79.2)*	52 *(11.1)*	66 *(18.9)*	28.945 *(97.743)*
50% of Pull at Reduced Engine Speed—Two Hours 9th (H1) Gear											
76.23 *(56.84)*	4797 *(21.34)*	5.96 *(9.59)*	1481	2.78	5.020 *(19.004)*	0.454 *(0.276)*	15.18 *(2.991)*	171 *(77.2)*	58 *(14.4)*	61 *(16.1)*	28.810 *(97.287)*
MAXIMUM POWER IN SELECTED GEARS											
111.16 *(82.89)*	15056 *(66.97)*	2.66 *(4.28)*	2203	14.82	4th (L4) Gear			172 *(77.8)*	57 *(13.9)*	58 *(14.4)*	28.700 *(96.916)*
129.73 *(96.74)*	14702 *(65.40)*	3.31 *(5.33)*	2199	12.65	5th (M1) Gear			176 *(80.0)*	49 *(9.4)*	62 *(16.7)*	29.010 *(97.962)*
137.74 *(102.72)*	11697 *(52.03)*	4.42 *(7.11)*	2201	7.51	6th (M2) Gear			176 *(80.0)*	49 *(9.4)*	61 *(16.1)*	29.030 *(98.030)*
138.81 *(103.51)*	9565 *(42.55)*	5.44 *(8.76)*	2200	5.72	7th (M3) Gear			175 *(79.7)*	48 *(8.9)*	57 *(13.9)*	29.080 *(98.199)*
138.77 *(103.48)*	7824 *(34.80)*	6.65 *(10.70)*	2200	4.52	8th (M4) Gear			176 *(80.0)*	50 *(10.0)*	63 *(17.2)*	29.000 *(97.929)*
138.09 *(102.97)*	5876 *(26.14)*	8.81 *(14.18)*	2200	3.28	9th (H1) Gear			176 *(80.0)*	51 *(10.6)*	64 *(17.8)*	28.990 *(97.895)*

Department of Agricultural Engineering

Dates of Test: September 29 to October 6, 1981

Manufacturer: FIAT TRATTORI S.p.A. Via Pico della Mirandola 72-41100, Modena, Italy

FUEL, OIL AND TIME: **Fuel** No. 2 Diesel **Cetane No.** 46.3 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60°** *(15°/15°)* 0.8283 **Fuel weight** 6.897 lbs/gal *(0.827 kg/l)* **Oil SAE** 30 **API service classification** SE-SF/CC-CD **To motor** 4.028 gal *(15.248 l)* **Drained from motor** 3.294 gal *(12.468 l)* **Transmission lubricant** SAE 20W-40 **Final drive lubricant** API 303 **Total time engine was operated** 38.0 hours.

ENGINE: **Make** Fiat Diesel **Type** six cylinder vertical with turbocharger **Serial No.** CM8365.25*500*161174* **Crankshaft** lengthwise **Rated rpm** 2200 **Bore and stroke** 4.528" × 5.118" *(115 mm × 130 mm)* **Compression ratio** 15.5 to 1 **Displacement** 494 cu in *(8102 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements with centrifugal precleaner **Oil filter** one full flow cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil **Fuel filter** one paper cartridge, one paper element and sediment bowl **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: **Type** front wheel assist with duals **Serial No.** 1880 DT/12* 745695* **Tread width** rear 64.6" *(1640 mm)* to 121" *(3075 mm)* front 74.8" *(1900 mm)* to 86.6" *(2200 mm)* **Wheel base** 113.6" *(2885 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 37.2" *(945 mm)* Vertical distance above roadway 42.5" *(1080 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph** *(km/h)* first 1.7 *(2.7)* second 2.1 *(3.4)* third 2.5 *(4.1)* fourth 3.1 *(4.9)* fifth 3.8 *(6.1)* sixth 4.8 *(7.7)* seventh 5.8 *(9.3)* eighth 7.0 *(11.3)* ninth 9.2 *(14.7)* tenth 11.6 *(18.6)* eleventh 14.0 *(22.5)* twelfth 16.9 *(27.1)* reverse 3.9 *(6.2)*, 4.9 *(7.9)*, 5.9 *(9.5)*, 7.2 *(11.5)* **Clutch** single dry disc operated by foot pedal **Brakes** multiple wet disc hydraulically operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 225" *(5.72 m)* left 233" *(5.91 m)* (on concrete surface without brake) right 265" *(6.72 m)* left 267" *(6.77 m)* **Turning space diameter** (on concrete surface with brake applied) right 467" *(11.87 m)* left 482" *(12.25 m)* (on concrete surface without brake) right 546" *(13.87 m)* left 550" *(13.97 m)* **Power take-off** 1000 rpm at 2074 engine rpm.

LUGGING ABILITY IN 7th (M3) GEAR

Crankshaft Speed rpm	2200	1984	1757	1546	1319	1093
Pull—lbs *(kN)*	9565 *(42.55)*	10377 *(46.16)*	10969 *(48.79)*	11688 *(51.99)*	12074 *(53.71)*	11179 *(49.72)*
Increase in Pull %	0	8	15	22	26	17
Power—Hp *(kW)*	138.81 *(103.51)*	134.86 *(100.56)*	125.61 *(93.67)*	116.51 *(86.88)*	102.56 *(76.48)*	79.36 *(59.18)*
Speed—Mph *(km/h)*	5.44 *(8.76)*	4.87 *(7.84)*	4.29 *(6.91)*	3.74 *(6.02)*	3.19 *(5.13)*	2.66 *(4.28)*
Slip %	5.72	6.28	6.74	7.36	7.97	7.21

TRACTOR SOUND LEVEL WITH CAB	dB(A)	Front Wheel Drive Disengaged dB(A)
Maximum Available Power—Two Hours	81.0	81.0
75% of Pull at Maximum Power—Ten Hours		80.5
50% of Pull at Maximum Power—Two Hours		79.5
50% of Pull at Reduced Engine Speed—Two Hours		75.5
Bystander in 12th (H4) gear		88.0

DRAWBAR PERFORMANCE
(Front Wheel Drive Engaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 7th (M3) Gear											
136.47 *(101.76)*	9220 *(41.01)*	5.55 *(8.93)*	2199	4.40	9.570 *(35.469)*	0.474 *(0.288)*	14.56 *(2.869)*	174 *(78.6)*	60 *(15.6)*	61 *(16.1)*	28.760 *(97.118)*
MAXIMUM POWER IN SELECTED GEARS											
127.10 *(94.78)*	18223 *(81.06)*	2.62 *(4.21)*	2208	14.87	4th (L4) Gear			173 *(78.3)*	58 *(14.4)*	59 *(15.0)*	28.720 *(96.983)*
139.96 *(104.37)*	11576 *(51.49)*	4.53 *(7.30)*	2200	5.57	6th (M2) Gear			176 *(80.0)*	48 *(8.9)*	60 *(15.6)*	29.050 *(98.097)*
140.40 *(104.69)*	9473 *(42.14)*	5.56 *(8.94)*	2199	4.11	7th (M3) Gear			176 *(80.0)*	48 *(8.9)*	59 *(15.0)*	29.070 *(98.165)*

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi *(kPa)*	Four 20.8-38; 8; 14 *(95)*	Four 20.8-38; 8; 14 *(95)*
Ballast	—Liquid (each inner)	1165 lb *(528 kg)*	None
	—Cast Iron (each inner)	300 lb *(136 kg)*	None
Front Tires	—No., size, ply & psi *(kPa)*	Two 16.9-28; 6; 16 *(110)*	Two 16.9-28; 6; 16 *(110)*
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	45 lb *(20 kg)*	None
Height of Drawbar		20 in *(510 mm)*	20 in *(510 mm)*
Static Weight with Operator	—Rear	14160 lb *(6423 kg)*	11230 lb *(5094 kg)*
	Front	5550 lb *(2517 kg)*	5460 lb *(2477 kg)*
	Total	19710 lb *(8940 kg)*	16690 lb *(7571 kg)*

Hesston 1880 DT Fiat Diesel

REPAIRS and ADJUSTMENTS: During preliminary PTO testing, the fuel sediment bowl cracked. The bowl and gasket were replaced and test continued. During the maximum available power drawbar test the rear support strap of the lower fuel tank fell off. This was replaced at the end of this test.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump return was maintained at 133°F *(56.0°C)*. Six gears were chosen between 15% slip and 10 mph *(16.1 km/h)*.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1410.**

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Roy G. Arnold, Director

NEBRASKA TRACTOR TEST 1411 — MASSEY-FERGUSON MF 154-4 DIESEL 12 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—625 rpm)								
42.52 (31.71)	2250	2.599 (9.838)	0.421 (0.256)	16.36 (3.223)	190 (87.7)	60 (15.6)	75 (23.8)	28.953 (97.771)
Standard Power Take-off Speed (540 rpm)—One Hour								
40.38 (30.11)	1943	2.339 (8.854)	0.399 (0.243)	17.26 (3.401)	190 (87.8)	61 (15.9)	75 (23.9)	28.960 (97.794)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
36.93 (27.54)	2298	2.280 (8.631)	0.426 (0.259)	16.20 (3.191)	187 (86.1)	61 (15.8)	75 (23.9)	....
0.00 (0.00)	2580	0.774 (2.930)	....	....	183 (83.6)	60 (15.6)	75 (23.6)	....
18.84 (14.05)	2344	1.484 (5.618)	0.543 (0.330)	12.70 (2.501)	184 (84.4)	60 (15.6)	74 (23.3)	....
42.57 (31.74)	2250	2.611 (9.884)	0.423 (0.257)	16.31 (3.211)	190 (87.8)	60 (15.6)	75 (23.9)	....
9.52 (7.10)	2368	1.109 (4.198)	0.804 (0.489)	8.58 (1.691)	183 (83.6)	60 (15.6)	74 (23.3)	....
27.88 (20.79)	2314	1.867 (7.067)	0.462 (0.281)	14.94 (2.942)	185 (85.0)	60 (15.6)	75 (23.9)	....
Av 22.62 Av (16.87)	2326	1.687 (6.386)	0.514 (0.313)	13.41 (2.642)	185 (85.1)	60 (15.6)	75 (23.7)	28.955 (97.777)

DRAWBAR PERFORMANCE
(Front Wheel Drive Disengaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cool-ing med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 8th Gear											
34.75 (25.91)	2867 (12.75)	4.54 (7.31)	2250	9.11	2.520 (9.539)	0.500 (0.304)	13.79 (2.716)	183 (83.9)	53 (11.7)	57 (13.9)	28.660 (96.781)
75% of Pull at Maximum Power—Ten Hours 8th Gear											
27.87 (20.78)	2202 (9.80)	4.75 (7.64)	2294	6.91	2.143 (8.112)	0.530 (0.323)	13.00 (2.562)	181 (82.8)	51 (10.4)	57 (13.8)	29.013 (97.973)
50% of Pull at Maximum Power—Two Hours 8th Gear											
19.47 (14.52)	1479 (6.58)	4.94 (7.94)	2325	4.50	1.704 (6.451)	0.604 (0.367)	11.42 (2.251)	181 (82.8)	53 (11.7)	65 (18.3)	29.145 (98.418)
50% of Pull at Reduced Engine Speed—Two Hours 10th Gear											
19.53 (14.56)	1484 (6.60)	4.94 (7.95)	1505	4.35	1.360 (5.147)	0.480 (0.292)	14.36 (2.830)	179 (81.7)	54 (12.2)	58 (14.4)	28.620 (96.645)

MAXIMUM POWER IN SELECTED GEARS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Gear	Cool-ing med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
29.76 (22.19)	4144 (18.44)	2.69 (4.33)	2273	14.92	6th Gear	181 (82.8)	55 (12.8)	64 (17.8)	28.620 (96.645)
34.30 (25.58)	3753 (16.60)	3.45 (5.55)	2250	13.17	7th Gear	184 (84.4)	52 (11.1)	62 (16.7)	29.180 (98.536)
35.40 (26.39)	2936 (13.06)	4.52 (7.27)	2248	9.50	8th Gear	184 (84.2)	50 (10.0)	59 (15.0)	29.200 (98.604)
35.16 (26.22)	2293 (10.20)	5.75 (9.25)	2247	7.19	9th Gear	184 (84.4)	52 (11.1)	62 (16.7)	29.180 (98.536)
35.11 (26.18)	1808 (8.04)	7.28 (11.72)	2250	5.62	10th Gear	184 (84.4)	52 (11.1)	63 (17.2)	29.180 (98.536)
33.90 (25.28)	1358 (6.04)	9.36 (15.07)	2249	4.24	11th Gear	184 (84.4)	52 (11.1)	63 (17.2)	29.150 (98.435)

Department of Agricultural Engineering

Dates of Test: October 12-19, 1981

Manufacturer: MASSEY FERGUSON S.p.A
LANDINI DIVISION Via Matteotti 17,42042
Fabrico (RE), Italy

FUEL, OIL AND TIME: **Fuel** No. 2 Diesel **Cetane No.** 46.3 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60°** *(15°/15°)* 0.8281 **Fuel weight** 6.895 lbs/gal *(0.826 kg/l)* **Oil SAE** 20-20W **API service classification** SB/SE-CA/CC **To motor** 1.485 gal *(5.619 l)* **Drained from motor** 1.140 gal *(4.314 l)* **Transmission and final drive lubricant** MF Permatran fluid **Total time engine was operated** 46.0 hours.

ENGINE: **Make** Perkins Diesel **Type** three cylinder vertical **Serial No.** CE21899U627706G **Crankshaft** lengthwise **Rated rpm** 2250 **Bore and stroke** 3.6" × 5.0" *(91.4 mm × 127 mm)* **Compression ratio** 16.5 to 1 **Displacement** 153 cu in *(2502 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** oil bath with centrifugal precleaner **Oil filter** one full flow paper cartridge **Fuel filter** one paper element **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: **Type** front wheel assist **Serial No.** 2227212 **Tread width** rear 55.1" *(1400 mm)* to 74.8" *(1900 mm)* front 59.1" *(1500 mm)* **Wheel base** 81.1" *(2060 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 34.5" *(876 mm)* Vertical distance above roadway 28.9" *(733 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph** *(km/h)* first 0.8 *(1.3)* second 1.3 *(2.0)* third 1.6 *(2.6)* fourth 2.0 *(3.2)* fifth 2.5 *(4.0)* sixth 3.1 *(5.0)* seventh 3.9 *(6.3)* eighth 4.9 *(8.0)* ninth 6.1 *(9.9)* tenth 7.6 *(12.3)* eleventh 9.7 *(15.5)* twelfth 15.1 *(24.3)* reverse 2.1 *(3.4)*, 3.3 *(5.3)*, 4.2 *(6.7)*, 6.5 *(10.5)* **Clutch** dry disc operated by foot pedal **Brakes** dry disc operated by two foot pedals which can be locked together and hand lever **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 156.1" *(3.96 m)* left 160.3" *(4.07 m)* (on concrete surface without brake) right 184.9" *(4.70 m)* left 185.3" *(4.71 m)* **Turning space diameter** (on concrete surface with brake applied) right 323.2" *(8.21 m)* left 331.5" *(8.42 m)* (on concrete surface without brake) right 380.8" *(9.67 m)* left 381.7" *(9.69 m)* **Power take-off** 540 rpm at 1943 engine rpm.

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

LUGGING ABILITY IN 8th GEAR

Crankshaft Speed rpm	2248	2027	1800	1577	1348	1128
Pull—lbs (kN)	2936 (13.06)	3176 (14.13)	3379 (15.03)	3551 (15.71)	3572 (15.89)	3489 (15.52)
Increase in Pull %	0	8	15	20	22	19
Power—Hp (kW)	35.40 (26.39)	34.06 (25.40)	31.93 (23.81)	29.01 (21.64)	25.02 (18.66)	20.53 (15.31)
Speed—Mph (km/h)	4.52 (7.27)	4.02 (6.47)	3.54 (5.70)	3.08 (4.96)	2.63 (4.23)	2.21 (3.55)
Slip %	9.50	10.69	11.40	12.10	12.20	11.90

TRACTOR SOUND LEVEL WITHOUT CAB	dB(A)	Front Wheel Drive Disengaged dB(A)
Maximum Available Power—Two Hours	98.5	98.5
75% of Pull at Maximum Power—Ten Hours		97.0
50% of Pull at Maximum Power—Two Hours		96.5
50% of Pull at Reduced Engine Speed—Two Hours		93.0
Bystander in 12th gear		88.5

DRAWBAR PERFORMANCE
(Front Wheel Drive Engaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cool-ing med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 8th Gear											
35.56 (26.52)	2847 (12.67)	4.68 (7.54)	2250	6.28	2.520 (9.539)	0.489 (0.297)	14.11 (2.780)	184 (84.2)	51 (10.6)	65 (18.3)	28.930 (97.692)

MAXIMUM POWER IN SELECTED GEARS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Gear	Cool-ing med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
29.87 (22.28)	5138 (22.85)	2.18 (3.51)	2275	14.93	5th Gear	181 (82.8)	55 (12.8)	62 (16.7)	28.610 (96.612)
36.45 (27.18)	2924 (13.00)	4.68 (7.52)	2251	6.48	8th Gear	184 (84.4)	51 (10.6)	61 (16.1)	29.190 (98.570)

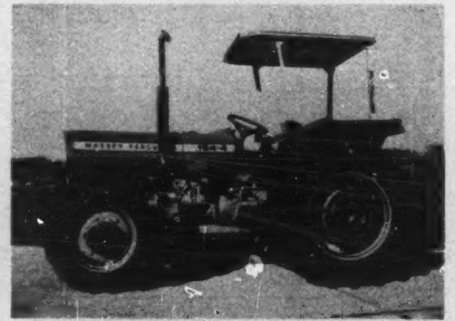
TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi *(kPa)*	Two 13.6-28; 6; 18 *(125)*	Two 13.6-28; 6; 18 *(125)*
Ballast	—Liquid (each)	463 lb *(210 kg)*	None
	—Cast Iron (each)	305 lb *(138 kg)*	None
Front Tires	—No., size, ply & psi *(kPa)*	Two 9.5-20; 4; 18 *(125)*	Two 9.5-20; 4; 18 *(125)*
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	40 lb *(18 kg)*	None
Height of Drawbar		21.5 in *(545 mm)*	21.5 in *(545 mm)*
Static Weight with Operator—Rear		4660 lb *(2114 kg)*	3125 lb *(1417 kg)*
Front		2260 lb *(1025 kg)*	2180 lb *(989 kg)*
Total		6920 lb *(3139 kg)*	5305 lb *(2406 kg)*

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump was maintained at 149°F *(65.0°C)*. Six gears were chosen between 15% slip and 10 mph *(16.1 km/h)*.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. 1411.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers



Massey Ferguson MF 154-4 Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Roy G. Arnold, Director

NEBRASKA TRACTOR TEST 1412
STEIGER COUGAR III ST-280 CATERPILLAR DIESEL
20 SPEED

DRAWBAR PERFORMANCE AT 2100 RPM

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 10th Gear											
238.27 (177.68)	12586 (55.99)	7.10 (11.43)	2097	2.67	16.044 (60.734)	0.464 (0.282)	14.85 (2.926)	180 (81.9)	35 (1.4)	41 (5.0)	29.325 (99.026)
75% of Pull at Maximum Power—Ten Hours 10th Gear											
192.43 (143.50)	9715 (43.21)	7.43 (11.95)	2182	2.11	13.985 (52.938)	0.501 (0.305)	13.76 (2.711)	177 (80.4)	31 (−0.6)	37 (2.7)	29.363 (99.154)
50% of Pull at Maximum Power—Two Hours 10th Gear											
130.94 (97.64)	6484 (28.84)	7.57 (12.19)	2221	1.96	11.204 (42.411)	0.590 (0.359)	11.69 (2.302)	177 (80.3)	37 (2.8)	39 (3.6)	28.770 (97.152)
50% of Pull at Reduced Engine Speed—Two Hours 15th Gear											
130.57 (97.36)	6504 (28.93)	7.53 (12.12)	1175	1.88	8.448 (31.980)	0.446 (0.271)	15.46 (3.045)	178 (80.8)	40 (4.2)	42 (5.3)	28.720 (96.983)

MAXIMUM POWER IN SELECTED GEARS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Gear	Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
206.52 (154.00)	32099 (142.79)	2.41 (3.88)	2149	14.48	2nd Gear	178 (80.8)	33 (0.6)	39 (3.9)	28.780 (97.180)
228.65 (170.51)	30484 (135.60)	2.81 (4.53)	2098	10.27	3rd Gear	178 (80.8)	34 (1.1)	40 (4.4)	28.780 (97.186)
230.90 (172.18)	26431 (117.57)	3.28 (5.27)	2099	7.23	4th Gear	180 (82.2)	40 (4.4)	50 (10.0)	29.260 (98.807)
239.16 (178.34)	23661 (105.25)	3.79 (6.10)	2099	5.78	5th Gear	180 (82.2)	40 (4.4)	50 (10.0)	29.260 (98.807)
241.40 (180.01)	20996 (93.40)	4.31 (6.94)	2099	4.69	6th Gear	180 (82.2)	40 (4.4)	50 (10.0)	29.270 (98.840)
243.31 (181.44)	18458 (82.11)	4.94 (7.96)	2100	3.97	7th Gear	180 (82.2)	41 (5.0)	51 (10.6)	29.260 (98.807)
243.06 (181.25)	16289 (72.46)	5.60 (9.01)	2098	3.32	8th Gear	181 (82.8)	40 (4.4)	48 (8.9)	29.260 (98.807)
246.13 (183.54)	14686 (65.33)	6.28 (10.11)	2100	3.00	9th Gear	181 (82.5)	40 (4.4)	48 (8.9)	29.260 (98.800)
245.50 (183.07)	12957 (57.64)	7.11 (11.43)	2099	2.67	10th Gear	180 (82.2)	38 (3.3)	45 (7.2)	29.310 (98.975)
241.51 (180.10)	11177 (49.72)	8.10 (13.04)	2099	2.34	11th Gear	181 (82.8)	40 (4.4)	48 (8.9)	29.260 (98.807)

LUGGING ABILITY IN 10th GEAR

Crankshaft Speed rpm	2099	1889	1677	1472	1258	1046	840
Pull—lbs (kN)	12957 (57.64)	15175 (67.49)	16883 (75.10)	18111 (80.56)	18754 (83.42)	18913 (84.13)	17028 (75.74)
Increase in Pull %	0	17	30	40	45	46	31
Power—Hp (kW)	245.50 (183.07)	257.39 (191.94)	253.23 (188.83)	237.78 (177.[illegible])	209.85 (156.48)	175.87 (131.15)	127.82 (95.31)
Speed—Mph (km/h)	7.11 (11.43)	6.36 (10.24)	5.62 (9.05)	4.92 (7.92)	4.20 (6.75)	3.49 (5.61)	2.81 (4.53)
Slip %	2.67	3.16	3.49	3.65	3.97	4.13	3.65

TRACTOR SOUND LEVEL WITH CAB	1700 RPM dB(A)	2100RPM dB(A)
Maximum Available Power—Two Hours	77.0	77.5
75% of Pull at Maximum Power—Ten Hours		78.0
50% of Pull at Maximum Power—Two Hours		77.5
50% of Pull at Reduced Engine Speed—Two Hours		76.0
Bystander in 18th gear		90.0

Department of Agricultural Engineering

Dates of Test: October 19-30, 1981

Manufacturer: STEIGER TRACTOR, INC., 1701 Westview Drive, Fargo, North Dakota 58105

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 4[illegible].3 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60°** *(15°/15°)* 0.8281 **Fuel weight** 6.895 lbs/gal *(0.826 kg/l)* **Oil** SAE 15W-40 **API service classification** CC [illegible]D SE **To motor** 7.684 gal *(29.087 l)* **Drained from motor** 6.504 gal *(24.621 l)* **Transmission and hydraulic lubricant** SAE 10 hydraulic oil **Final drive lubricant** SAE 85W90 **Total time engine was operated** 45.0 hours.

ENGINE: Make Caterpillar Diesel **Type** six cylinder vertical with turbocharger **Serial No.** 90U 15983 **Crankshaft** lengthwise **Rated rpm** 1700 to 2100 **Bore and stroke** 5.4" × 6.5" *(137 mm × 165 mm)* **Compression ratio** 14.5 to 1 **Displacement** 893 cu in *(14634 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements with aspirator **Oil filter** one full flow cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic oil, radiator for transmission and transfer case oil **Fuel filter** one paper cartridge **Muffler** none **Cooling medium temperature control** one thermostat.

CHASSIS: Type four wheel drive with duals **Serial No.** 111-00005 81 **Tread width** rear 79.0" *(2007 mm)* to 136.4" *(3464 mm)* front 79.0" *(2007 mm)* to 136.4" *(3464 mm)* **Wheel base** 128" *(3251 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 76.0" *(1930 mm)* Vertical distance above roadway 45.5" *(1156 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph (km/h)** first 2.3 *(3.8)* second 2.6 *(4.2)* third 3.0 *(4.8)* fourth 3.4 *(5.4)* fifth 3.8 *(6.2)* sixth 4.3 *(7.0)* seventh 4.9 *(7.9)* eighth 5.5 *(8.9)* ninth 6.2 *(10.0)* tenth 7.0 *(11.2)* eleventh 7.9 *(12.7)* twelfth 8.9 *(14.3)* thirteenth 10.2 *(16.5)* fourteenth 11.5 *(18.6)* fifteenth 13.1 *(21.1)* sixteenth 14.7 *(23.7)* seventeenth 16.0 *(25.7)* eighteenth 18.0 *(28.9)* nineteenth 20.5 *(33.0)* twentieth 23.1 *(37.1)* reverse 2.3 *(3.8)*, 2.6 *(4.2)*, 3.0 *(4.8)*, 3.4 *(5.4)* **Clutch** dual dry disc hydraulically operated by foot pedal **Brakes** multiple dry disc hydraulically operated by foot pedal or mechanically by hand lever **Steering** hydrostatic and articulated **Turning radius** (on concrete surface without brake) right 283" *(7.19 m)* left 288" *(7.32 m)* **Turning space diameter** (on concrete surface without brake) right 590" *(14.99 m)* left 600" *(15.24 m)* **Power take-off** none.

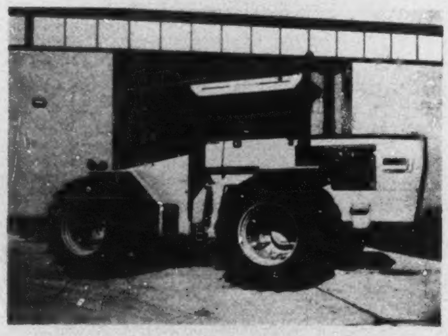
DRAWBAR PERFORMANCE AT 1700 RPM

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 10th Gear											
247.27 (184.39)	16278 (72.41)	5.70 (9.17)	1700	3.65	15.065 (57.028)	0.420 (0.256)	16.41 (3.233)	180 (82.2)	44 (6.7)	49 (9.4)	28.950 (97.750)

MAXIMUM POWER IN SELECTED GEARS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Gear	Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
228.98 (170.75)	32462 (144.40)	2.65 (4.26)	1849	14.93	4th Gear	179 (81.7)	36 (2.2)	42 (5.6)	28.770 (97.152)
237.45 (177.07)	30378 (135.13)	2.93 (4.72)	1700	10.06	5th Gear	178 (81.1)	35 (1.7)	41 (5.0)	28.770 (97.152)
240.94 (179.67)	26510 (117.92)	3.41 (5.49)	1701	7.08	6th Gear	181 (82.8)	40 (4.4)	50 (10.0)	29.270 (98.840)
245.69 (183.21)	23397 (104.08)	3.94 (6.34)	1701	5.47	7th Gear	181 (82.8)	41 (5.0)	51 (10.6)	29.260 (98.807)
247.19 (184.33)	20701 (92.08)	4.48 (7.21)	1702	4.77	8th Gear	182 (83.1)	40 (4.4)	48 (8.9)	29.260 (98.807)
251.93 (187.86)	18755 (83.43)	5.04 (8.11)	1700	4.15	9th Gear	182 (83.1)	40 (4.4)	48 (8.9)	29.260 (98.807)
252.69 (188.43)	16638 (74.01)	5.70 (9.17)	1699	3.49	10th Gear	180 (82.2)	39 (3.9)	48 (8.9)	29.270 (98.840)
253.72 (189.20)	14609 (64.99)	6.51 (10.[illegible]8)	1700	3.00	11th Gear	182 (83.1)	40 (4.4)	48 (8.9)	29.260 (98.807)
250.67 (186.93)	12763 (56.77)	7.36 (11.85)	1698	2.67	12th Gear	180 (82.2)	40 (4.4)	50 (10.0)	29.270 (98.840)
252.09 (187.99)	11165 (49.66)	8.47 (13.63)	1701	2.42	13th Gear	180 (82.2)	41 (5.0)	51 (10.6)	29.260 (98.807)

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi *(kPa)*	Four 23.1-34; 8; inner 14 *(95)* outer 12 *(85)*	Four 23.1-34; 8; inner 14 *(95)* outer 12 *(85)*
Ballast	—Liquid (each)	None	None
	—Test Equip. (each)	81 lb *(37 kg)*	None
Front Tires	—No., size, ply & psi *(kPa)*	Four 23.1-34; 8; inner 14 *(95)* outer 12 *(85)*	Four 23.1-34; 8; inner 14 *(95)* outer 12 *(85)*
Ballast	—Liquid (each inner)	1190 lb *(540 kg)*	None
	—Cast Iron (each)	None	None
Height of Drawbar		17.5 in *(445 mm)*	17.5 in *(445 mm)*
Static Weight with Operator	—Rear	12585 lb *(5708 kg)*	12260 lb *(5561 kg)*
	Front	20760 lb *(9417 kg)*	18380 lb *(8337 kg)*
	Total	33345 lb *(15125 kg)*	30640 lb *(13898 kg)*



Steiger Cougar III ST-280 Caterpillar Diesel

REPAIRS and ADJUSTMENTS: During preliminary drawbar tests, the fuel shut off system malfunctioned. Test continued after repair.

REMARKS: All test results were determined from observed data obtained in accordance with current SAE and ASAE test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump return was maintained at 140°F *(60.0°C)*. Ten gears were chosen between 15% slip and 10 mph *(16.1 km/h)*.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1412**.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Roy G. Arnold, Director

NEBRASKA TRACTOR TEST 1413
STEIGER COUGAR III PTA-280 CATERPILLAR DIESEL
10 SPEED

DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cool-ing med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 5th (4L) Gear											
231.61 *(172.71)*	15507 *(68.98)*	5.60 *(9.01)*	2099	3.31	16.262 *(61.558)*	0.484 *(0.294)*	14.24 *(2.806)*	180 *(81.9)*	49 *(9.4)*	56 *(13.1)*	28.940 *(97.726)*
75% of Pull at Maximum Power—Ten Hours 5th (4L) Gear											
186.72 *(139.24)*	11878 *(52.84)*	5.89 *(9.49)*	2189	2.43	14.213 *(53.803)*	0.525 *(0.319)*	13.14 *(2.588)*	178 *(81.1)*	53 *(11.8)*	63 *(17.3)*	28.866 *(97.476)*
50% of Pull at Maximum Power—Two Hours 5th (4L) Gear											
127.62 *(95.16)*	7920 *(35.23)*	6.04 *(9.72)*	2225	1.62	11.403 *(43.166)*	0.616 *(0.375)*	11.19 *(2.205)*	179 *(81.7)*	56 *(13.1)*	67 *(19.4)*	28.910 *(97.625)*
50% of Pull at Reduced Engine Speed—Two Hours 7th (2H) Gear											
127.68 *(95.21)*	7924 *(35.25)*	6.04 *(9.72)*	1545	1.74	8.974 *(33.970)*	0.485 *(0.295)*	14.23 *(2.803)*	177 *(80.6)*	54 *(11.9)*	59 *(14.7)*	28.710 *(96.949)*

MAXIMUM POWER IN SELECTED GEARS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Gear	Cool-ing med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
149.98 *(111.84)*	32085 *(142.72)*	1.75 *(2.82)*	2197	14.73	1st (1L) Gear	178 *(80.8)*	47 *(8.3)*	50 *(10.0)*	28.760 *(97.118)*
224.19 *(167.18)*	24761 *(110.14)*	3.40 *(5.46)*	2099	6.39	2nd (2L) Gear	182 *(83.3)*	56 *(13.3)*	68 *(20.0)*	28.910 *(97.625)*
224.55 *(167.45)*	19460 *(86.56)*	4.33 *(6.96)*	2098	4.28	3rd (1H) Gear	183 *(83.9)*	56 *(13.3)*	69 *(20.6)*	28.920 *(97.659)*
232.96 *(173.72)*	19943 *(88.71)*	4.38 *(7.05)*	2100	4.44	4th (3L) Gear	182 *(83.1)*	55 *(12.8)*	66 *(18.9)*	28.920 *(97.659)*
236.40 *(176.28)*	15813 *(70.34)*	5.61 *(9.02)*	2101	3.31	5th (4L) Gear	182 *(83.1)*	54 *(12.2)*	65 *(18.3)*	28.930 *(97.692)*
236.55 *(176.39)*	12538 *(55.77)*	7.07 *(11.39)*	2099	2.41	6th (5L) Gear	182 *(83.1)*	55 *(12.8)*	67 *(19.4)*	28.920 *(97.659)*
233.58 *(174.18)*	10705 *(47.62)*	8.18 *(13.17)*	2100	1.99	7th (2H) Gear	182 *(83.3)*	56 *(13.3)*	68 *(20.0)*	28.920 *(97.659)*

LUGGING ABILITY IN 5th (4L) GEAR

Crankshaft Speed rpm	2101	1888	1681	1470
Pull—lbs *(kN)*	15813 *(70.34)*	18365 *(81.69)*	20381 *(90.66)*	21977 *(97.76)*
Increase in Pull %	0	16	29	39
Power—Hp *(kW)*	236.40 *(176.28)*	244.98 *(182.68)*	240.48 *(179.32)*	225.62 *(168.24)*
Speed—Mph *(km/h)*	5.61 *(9.02)*	5.00 *(8.05)*	4.42 *(7.12)*	3.85 *(6.20)*
Slip %	3.31	4.12	4.80	5.07

At 1460 RPM the automatic transmission shifted down to 4th (3L) gear and the test was terminated.

TRACTOR SOUND LEVEL WITH CAB	dB(A)
Maximum Available Power—Two Hours	76.5
75% of Pull at Maximum Power—Ten Hours	77.0
50% of Pull at Maximum Power—Two Hours	77.0
50% of Pull at Reduced Engine Speed—Two Hours	75.0
Bystander in 10th (5H) gear	90.0

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi *(kPa)*	Four 23.1-34; 8; inner 14 *(95)* outer 12 *(83)*	Four 23.1-34; 8; inner 14 *(95)* outer 12 *(83)*
Ballast	—Liquid (each)	None	None
	—Tire Equip. (each)	80 lb *(36 kg)*	None
Front Tires	—No., size, ply & psi *(kPa)*	Four 23.1-34; 8; inner 14 *(95)* outer 12 *(83)*	Four 23.1-34; 8; inner 14 *(95)* outer 12 *(83)*
Ballast	—Liquid (each inner)	1025 lb *(465 kg)*	None
	—Cast Iron (each)	None	None
Height of Drawbar		17.5 in *(445 mm)*	17.5 in *(445 mm)*
Static Weight with Operator—Rear		13120 lb *(5951 kg)*	12800 lb *(5806 kg)*
Front		20030 lb *(9086 kg)*	17980 lb *(8156 kg)*
Total		33150 lb *(15037 kg)*	30780 lb *(13962 kg)*

Department of Agricultural Engineering

Dates of Test: October 21-November 3, 1981

Manufacturer: STEIGER TRACTOR, INC., 1701 Westview Drive, Fargo, North Dakota 58103

FUEL, OIL AND TIME: **Fuel** No. 2 Diesel **Cetane No.** 46.3 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60°** *(15°/15°)* 0.8281 **Fuel weight** 6.895 lbs/gal *(0.826 kg/l)* **Oil SAE** 15W-40 **API service classification** CC CD SE **To motor** 7.296 gal *(27.618 l)* **Drained from motor** 6.094 gal *(23.068 l)* **Transmission lubricant** hydraulic transmission fluid type C-3 (Dextron) **Transfer case lubricant** 303 or equivalent **Hydraulic oil** SAE 10 hydraulic oil, 303 or equivalent **Final drive lubricant** 85W 90 **Total time engine was operated** 31.5 hours.

ENGINE: **Make** Caterpillar Diesel **Type** six cylinder vertical with turbocharger **Serial No.** 90U15964 **Crankshaft** lengthwise **Rated rpm** 2100 **Bore and stroke** 5.4" × 6.5" *(137 mm × 165 mm)* **Compression ratio** 14.5 to 1 **Displacement** 893 cu in *(14634 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements with aspirator **Oil filter** one full flow cartridge **Oil cooler** separate engine coolant heat exchangers for crankcase oil and transmission oil, separate radiators for hydraulic and transfer case oil **Muffler** none **Cooling medium temperature control** one thermostat.

CHASSIS: **Type** four wheel drive with duals **Serial No.** 155-00002 81 **Tread width** rear 79.0" *(2007 mm)* to 136.4" *(3464 mm)* front 79.0" *(2007 mm)* to 136.4" *(3464 mm)* **Wheel base** 132.5" *(3365 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 77.4" *(1966 mm)* Vertical distance above roadway 45.5" *(1156 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with automatic powershift and torque convertor lockup **Advertised speeds mph (km/h)** first 1.9 *(3.0)* second 3.4 *(5.6)* third 4.3 *(6.9)* fourth 4.4 *(7.0)* fifth 5.5 *(8.9)* sixth 6.9 *(11.1)* seventh 7.9 *(12.8)* eighth 10.0 *(16.2)* ninth 12.7 *(20.4)* tenth 15.9 *(25.6)* reverse 2.4 *(3.8)*, 5.4 *(8.7)* **Clutch** none **Brakes** multiple dry disc hydraulically operated by foot pedal or mechanically by hand lever **Steering** hydrostatic and articulated **Turning radius** (on concrete surface without brake) right 257" *(6.53 m)* left 261.5" *(6.64 m)* **Turning space diameter** (on concrete surface without brake) right 537" *(13.64 m)* left 546" *(13.87 m)* **Power take-off** none.

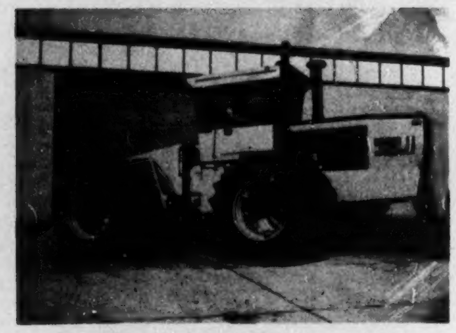
REPAIRS and ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump return was maintained at 158°F *(70.0°C)* Seven gears were chosen between 15% slip and 10 mph *(16.1 km/h)*.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. 1413.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers



Steiger Cougar III PTA-280 Caterpillar Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Roy G. Arnold, Director

NEBRASKA TRACTOR TEST 1414
STEIGER BEARCAT III ST-225 DIESEL
20 SPEED
(SERIAL NUMBERS 109-00328 and HIGHER)

DRAWBAR PERFORMANCE AT 2100 RPM

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cool-ing med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 11th Gear											
186.21 *(138.86)*	11254 *(50.06)*	6.20 *(9.99)*	2099	2.54	13.307 *(50.372)*	0.495 *(0.300)*	13.99 *(2.757)*	177 *(80.6)*	60 *(15.6)*	69 *(20.6)*	28.585 *(96.527)*
75% of Pull at Maximum Power—Ten Hours 11th Gear											
153.50 *(114.47)*	8903 *(39.60)*	6.47 *(10.41)*	2179	2.18	11.338 *(42.919)*	0.509 *(0.310)*	13.54 *(2.667)*	176 *(79.8)*	48 *(9.0)*	59 *(15.0)*	29.190 *(98.570)*
50% of Pull at Maximum Power—Two Hours 11th Gear											
105.18 *(78.43)*	5953 *(26.48)*	6.63 *(10.66)*	2222	1.70	9.028 *(34.176)*	0.592 *(0.360)*	11.65 *(2.295)*	176 *(79.7)*	55 *(12.5)*	55 *(12.8)*	29.020 *(97.996)*
50% of Pull at Reduced Engine Speed—Two Hours 16th Gear											
104.23 *(77.72)*	5936 *(26.41)*	6.58 *(10.60)*	1186	1.66	7.125 *(26.970)*	0.471 *(0.287)*	14.63 *(2.882)*	174 *(78.6)*	57 *(13.9)*	58 *(14.4)*	29.040 *(98.064)*

MAXIMUM POWER IN SELECTED GEARS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Gear	Cool-ing med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
161.79 *(120.64)*	28805 *(128.13)*	2.11 *(3.39)*	2159	14.92	3rd Gear	179 *(81.7)*	48 *(8.9)*	49 *(9.4)*	28.900 *(97.591)*
176.52 *(131.63)*	28313 *(125.94)*	2.34 *(3.76)*	2101	13.83	4th Gear	178 *(81.1)*	45 *(7.2)*	46 *(7.8)*	28.910 *(97.625)*
186.28 *(138.91)*	24368 *(108.39)*	2.87 *(4.61)*	2100	7.80	5th Gear	177 *(80.6)*	59 *(15.0)*	64 *(17.8)*	28.890 *(97.557)*
191.57 *(142.86)*	21865 *(97.26)*	3.29 *(5.29)*	2099	6.06	6th Gear	177 *(80.6)*	59 *(15.0)*	64 *(17.8)*	28.880 *(97.523)*
195.03 *(145.43)*	19473 *(86.62)*	3.76 *(6.04)*	2101	4.97	7th Gear	178 *(80.8)*	60 *(15.6)*	65 *(18.3)*	28.860 *(97.456)*
195.51 *(145.79)*	17225 *(76.61)*	4.26 *(6.85)*	2096	4.17	8th Gear	177 *(80.6)*	60 *(15.6)*	65 *(18.3)*	28.840 *(97.388)*
196.25 *(146.34)*	15239 *(67.79)*	4.83 *(7.77)*	2100	3.53	9th Gear	177 *(80.6)*	60 *(15.6)*	66 *(18.9)*	28.820 *(97.321)*
197.69 *(147.42)*	13562 *(60.33)*	5.47 *(8.80)*	2100	3.12	10th Gear	178 *(80.8)*	59 *(15.0)*	65 *(18.3)*	28.810 *(97.287)*
195.82 *(146.02)*	11855 *(52.73)*	6.19 *(9.97)*	2099	2.79	11th Gear	178 *(80.8)*	58 *(14.4)*	63 *(17.2)*	28.760 *(97.118)*
195.58 *(145.84)*	10483 *(46.63)*	7.00 *(11.26)*	2097	2.37	12th Gear	178 *(81.1)*	59 *(15.0)*	64 *(17.8)*	28.780 *(97.186)*
193.11 *(144.00)*	8919 *(39.67)*	8.12 *(13.07)*	2101	1.96	13th Gear	178 *(80.8)*	59 *(15.0)*	64 *(17.8)*	28.790 *(97.220)*

LUGGING ABILITY IN 11th GEAR

Crankshaft Speed rpm	2099	1889	1678	1469	1260	1054
Pull—lbs *(kN)*	11855 *(52.73)*	13367 *(59.46)*	14377 *(63.95)*	15683 *(69.76)*	15564 *(69.23)*	14424 *(64.16)*
Increase in Pull %	0	13	21	32	31	22
Power—Hp *(kW)*	195.82 *(146.02)*	197.97 *(147.62)*	188.52 *(140.58)*	179.55 *(133.88)*	152.74 *(113.90)*	118.76 *(88.56)*
Speed—Mph *(km/h)*	6.19 *(9.97)*	5.55 *(8.94)*	4.92 *(7.92)*	4.29 *(6.91)*	3.68 *(5.92)*	3.09 *(4.97)*
Slip %	2.79	2.95	3.28	3.61	3.61	3.44

TRACTOR SOUND LEVEL WITH CAB	1700 RPM dB(A)	2100RPM dB(A)
Maximum Available Power—Two Hours	77.0	77.5
75% of Pull at Maximum Power—Ten Hours		77.5
50% of Pull at Maximum Power—Two Hours		76.5
50% of Pull at Reduced Engine Speed—Two Hours		74.5
Bystander in 19th gear		98.0

Department of Agricultural Engineering

Dates of Test: October 19 to November 4, 1981

Manufacturer: STEIGER TRACTOR, INC.,
1701 Westview Drive, Fargo, North Dakota
58103

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 46.3 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60°** *(15°/15°)* 0.8281 **Fuel weight** 6.895 lbs/gal *(0.826 kg/l)* **Oil SAE** 15W-40 **API service classification** CC CD SE **To motor** 5.736 gal *(21.713 l)* **Drained from motor** 4.682 gal *(17.722 l)* **Transmission and hydraulic lubricant** SAE 10 hydraulic oil **Final drive lubricant** SAE 85W90 **Total time engine was operated** 37.0 hours.

ENGINE: Make Caterpillar Diesel **Type** six cylinder vertical with turbocharger **Serial No.** 64Z00412 **Crankshaft** lengthwise **Rated rpm** 1700 to 2100 **Bore and stroke** 4.75" × 6.0" *(120.6 mm × 152.4 mm)* **Compression ratio** 15.0 to 1 **Displacement** 638 cu in *(10455 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements with aspirator **Oil filter** one full flow cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic oil, radiator for transmission and transfer case oil **Fuel filter** one paper cartridge **Muffler** none **Cooling medium temperature control** one thermostat.

CHASSIS: Type four wheel drive with duals **Serial No.** 109-00349 81 **Tread width** rear 79.0" *(2007 mm)* to 136.4" *(3464 mm)* front 79.0" *(2007 mm)* to 136.4" *(3464 mm)* **Wheel base** 128" *(3251 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 71.9" *(1826 mm)* Vertical distance above roadway 44.6" *(1132 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph** *(km/h)* first 1.8 *(2.9)* second 2.0 *(3.3)* third 2.3 *(3.7)* fourth 2.6 *(4.2)* fifth 3.0 *(4.8)* sixth 3.3 *(5.4)* seventh 3.8 *(6.1)* eighth 4.2 *(6.8)* ninth 4.8 *(7.7)* tenth 5.4 *(8.6)* eleventh 6.1 *(9.8)* twelfth 6.8 *(11.0)* thirteenth 7.9 *(12.7)* fourteenth 8.8 *(14.2)* fifteenth 10.1 *(16.2)* sixteenth 11.3 *(18.1)* seventeenth 12.6 *(20.3)* eighteenth 14.1 *(22.7)* nineteenth 16.0 *(25.8)* twentieth 17.9 *(28.8)* reverse 1.8 *(2.9)*, 2.0 *(3.3)*, 2.3 *(3.7)*, 2.6 *(4.2)* **Clutch** dual dry disc hydraulically operated by foot pedal **Brakes** multiple dry disc hydraulically operated by foot pedal or mechanically by hand lever **Steering** hydrostatic and articulated **Turning radius** (on concrete surface without brake) right 283" *(7.19 m)* left 288" *(7.32 m)* **Turning space diameter** (on concrete surface without brake) right 590" *(14.99 m)* left 600" *(15.24 m)* **Power take-off** none.

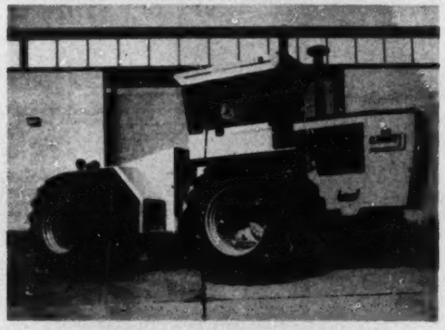
DRAWBAR PERFORMANCE AT 1700 RPM

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cool-ing med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 11th Gear											
184.69 *(137.73)*	13888 *(61.78)*	4.99 *(8.03)*	1701	3.32	11.965 *(45.293)*	0.447 *(0.272)*	15.44 *(3.041)*	176 *(80.0)*	57 *(13.9)*	62 *(16.7)*	28.730 *(97.017)*

MAXIMUM POWER IN SELECTED GEARS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Gear	Cool-ing med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
173.51 *(129.39)*	28595 *(127.19)*	2.28 *(3.66)*	1803	14.73	5th Gear	178 *(81.1)*	46 *(7.8)*	47 *(8.3)*	28.910 *(97.625)*
177.69 *(132.50)*	25818 *(114.84)*	2.58 *(4.15)*	1701	8.90	6th Gear	176 *(80.0)*	59 *(15.0)*	64 *(17.8)*	28.890 *(97.557)*
183.42 *(136.77)*	23021 *(102.40)*	2.99 *(4.81)*	1700	6.52	7th Gear	176 *(80.0)*	59 *(15.0)*	65 *(18.3)*	28.870 *(97.490)*
185.56 *(138.37)*	20441 *(90.93)*	3.40 *(5.48)*	1697	5.36	8th Gear	176 *(80.0)*	60 *(15.6)*	65 *(18.3)*	28.850 *(97.422)*
188.88 *(140.85)*	18306 *(81.43)*	3.87 *(6.23)*	1699	4.57	9th Gear	176 *(80.0)*	60 *(15.6)*	66 *(18.9)*	28.830 *(97.355)*
189.85 *(141.57)*	16212 *(72.11)*	4.39 *(7.07)*	1700	3.93	10th Gear	176 *(80.0)*	60 *(15.6)*	66 *(18.9)*	28.810 *(97.287)*
189.51 *(141.32)*	14278 *(63.51)*	4.98 *(8.01)*	1698	3.28	11th Gear	176 *(80.0)*	59 *(15.0)*	64 *(17.8)*	28.770 *(97.152)*
189.44 *(141.27)*	12601 *(56.05)*	5.64 *(9.07)*	1699	2.87	12th Gear	176 *(80.0)*	59 *(15.0)*	64 *(17.8)*	28.780 *(97.186)*
189.85 *(141.57)*	10888 *(48.43)*	6.54 *(10.52)*	1700	2.37	13th Gear	176 *(80.0)*	59 *(15.0)*	65 *(18.3)*	28.790 *(97.220)*
190.64 *(142.16)*	9673 *(43.03)*	7.39 *(11.89)*	1700	2.04	14th Gear	176 *(80.0)*	59 *(15.0)*	65 *(18.3)*	28.800 *(97.253)*
187.92 *(140.13)*	8423 *(37.47)*	8.37 *(13.46)*	1700	1.87	15th Gear	176 *(80.0)*	59 *(15.0)*	65 *(18.3)*	28.800 *(97.253)*

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi *(kPa)*	Four 23.1-34; 8; inner 14 *(95)* outer 12 *(85)*	Four 23.1-34; 8; inner 14 *(95)* outer 12 *(85)*
Ballast	—Liquid (each)	None	None
	—Test Equip. (each)	54 lb *(25 kg)*	None
Front Tires	—No., size, ply & psi *(kPa)*	Four 23.1-34; 8; inner 14 *(95)* outer 12 *(85)*	Four 23.1-34; 8; inner 14 *(95)* outer 12 *(85)*
Ballast	—Liquid (each inner)	None	None
	—Test equip. (each)	62 lb *(28 kg)*	None
Height of Drawbar		18 in *(455 mm)*	18 in *(455 mm)*
Static Weight with Operator—Rear		12815 lb *(5813 kg)*	12600 lb *(5715 kg)*
Front		17190 lb *(7797 kg)*	16940 lb *(7684 kg)*
Total		30005 lb *(13610 kg)*	29540 lb *(13399 kg)*



Steiger Bearcat III ST-225 Diesel

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump return was maintained at 131°F *(55.0°C)* Eleven gears were chosen between 15% slip and 10 mph *(16.1 km/h)*. The performance figures on this report apply to tractor chassis Serial No. 109-00328 and higher.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. 1414.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Roy G. Arnold, Director

NEBRASKA TRACTOR TEST 1415 — LONG 510 DIESEL 8 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—680 rpm)								
49.15 (36.65)	2400	3.242 (12.272)	0.455 (0.277)	15.16 (2.986)	205 (96.2)	58 (14.2)	75 (23.9)	29.043 (98.075)
Standard Power Take-off Speed (540 rpm)—One Hour								
46.91 (34.98)	2160	2.981 (11.284)	0.438 (0.267)	15.74 (3.100)	205 (96.1)	57 (13.7)	75 (23.9)	29.065 (98.148)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
42.55 (31.73)	2445	2.654 (10.046)	0.430 (0.262)	16.03 (3.158)	192 (88.9)	56 (13.1)	75 (23.6)	......
0.00 (0.00)	2531	0.818 (3.096)	.....	.....	174 (78.9)	56 (13.1)	75 (23.9)	......
21.68 (16.17)	2492	1.614 (6.110)	0.513 (0.312)	13.43 (2.646)	180 (82.2)	56 (13.1)	75 (23.6)	......
49.54 (36.94)	2400	3.281 (12.420)	0.457 (0.278)	15.10 (2.974)	201 (93.6)	56 (13.3)	76 (24.2)	......
10.95 (8.15)	2511	1.175 (4.448)	0.741 (0.451)	9.30 (1.832)	179 (81.4)	55 (12.8)	75 (23.9)	......
32.20 (24.01)	2466	2.093 (7.923)	0.448 (0.273)	15.38 (3.030)	182 (83.3)	55 (12.8)	76 (24.2)	......
Av 26.15 Av (19.50)	2474	1.939 (7.340)	0.511 (0.311)	13.48 (2.657)	184 (84.7)	55 (13.0)	75 (23.9)	29.005 (98.240)

DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 5th Gear											
41.73 (31.12)	3046 (13.55)	5.14 (8.27)	2399	6.70	3.173 (12.010)	0.524 (0.319)	13.15 (2.591)	183 (83.6)	49 (9.2)	59 (15.0)	29.145 (98.418)
75% of Pull at Maximum Power—Ten Hours 5th Gear											
34.18 (25.49)	2369 (10.54)	5.41 (8.71)	2479	4.94	2.527 (9.566)	0.510 (0.310)	13.52 (2.664)	176 (79.9)	48 (8.8)	57 (13.8)	29.027 (98.020)
50% of Pull at Maximum Power—Two Hours 5th Gear											
23.53 (17.55)	1590 (7.07)	5.55 (8.93)	2505	3.56	1.922 (7.274)	0.563 (0.343)	12.24 (2.412)	173 (78.3)	45 (7.5)	51 (10.5)	29.000 (97.929)
50% of Pull at Reduced Engine Speed—Two Hours 6th Gear											
23.45 (17.49)	1583 (7.04)	5.56 (8.94)	1666	3.46	1.632 (6.176)	0.480 (0.292)	14.37 (2.831)	173 (78.3)	51 (10.5)	60 (15.5)	28.955 (97.727)

MAXIMUM POWER IN SELECTED GEARS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Gear	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
32.44 (24.19)	6040 (26.87)	2.01 (3.24)	2409	14.98	2nd Gear	171 (77.2)	40 (4.4)	43 (6.1)	28.990 (97.893)
40.81 (30.43)	5211 (23.18)	2.94 (4.73)	2398	12.84	3rd Gear	180 (81.9)	48 (8.9)	58 (14.4)	29.170 (98.503)
41.95 (31.28)	3971 (17.66)	3.96 (6.38)	2400	9.06	4th Gear	182 (83.1)	48 (8.9)	59 (15.0)	29.166 (98.489)
43.27 (32.26)	3154 (14.03)	5.14 (8.28)	2400	6.56	5th Gear	179 (81.7)	47 (8.3)	55 (12.8)	29.180 (98.536)
42.70 (31.84)	2018 (8.98)	7.93 (12.77)	2400	4.28	6th Gear	182 (83.3)	48 (8.9)	59 (15.0)	29.180 (98.498)

LUGGING ABILITY IN 5th GEAR

Crankshaft Speed rpm	2400	2165	1914	1685	1446	1194	986
Pull—lbs (kN)	3154 (14.03)	3340 (14.86)	3468 (15.43)	3572 (15.89)	3636 (16.17)	3635 (16.17)	3381 (15.04)
Increase in Pull %	0	6	10	13	15	15	7
Power—Hp (kW)	43.27 (32.26)	41.10 (30.65)	37.61 (28.05)	34.00 (25.35)	29.63 (22.10)	24.45 (18.23)	18.34 (13.67)
Speed—Mph (km/h)	5.14 (8.28)	4.61 (7.43)	4.07 (6.55)	3.57 (5.74)	3.06 (4.93)	2.52 (4.06)	2.03 (3.27)
Slip %	6.56	7.13	7.48	7.60	7.91	8.02	7.24

Department of Agricultural Engineering

Dates of Test: October 29 to November 14, 1981

Manufacturer: UNIVERSAL TRACTOR BRASOV (UTB) Brasov, Romania

FUEL, OIL AND TIME: **Fuel** No. 2 Diesel **Cetane No.** 46.3 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60°** *(15°/15°)* 0.8281 **Fuel weight** 6.895 lbs/gal *(0.826 kg/l)* **Oil** Long engine oil **SAE** 15W-40 **API service classification** SF-CD **To motor** 2.088 gal *(7.904 l)* **Drained from motor** 1.603 gal *(6.067 l)* **Transmission lubricant** Exxon torque fluid 56 or equiv. **Final drive lubricant** SAE 90 gearlube **Total time engine was operated** 43.5 hours

ENGINE: **Make** UTB diesel **Type** three cylinder vertical **Serial No.** D-115.050X003637 **Crankshaft** lengthwise **Rated rpm** 2400 **Bore and stroke** 4.02" × 4.33" *(102 mm × 110 mm)* **Compression ratio** 17 to 1 **Displacement** 164.5 cu in *(2697 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** oil bath with centrifugal precleaner **Oil filter** one full flow cartridge **Fuel filter** two paper elements **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: **Type** standard **Serial No.** 415334 **Tread width** rear 52.2" *(1327 mm)* to 76.3" *(1937 mm)* front 50.4"*(1280 mm)* to 77.5" *(1969 mm)* **Wheel base** 76" *(1930 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from centerline of rear wheels 26.8" *(680 mm)* Vertical distance above roadway 28" *(711 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph (km/h)** first 1.5 *(2.5)* second 2.3 *(3.7)* third 3.4 *(5.4)* fourth 4.3 *(7.0)* fifth 5.5 *(8.8)* sixth 8.3 *(13.3)* seventh 12.1 *(19.5)* eighth 15.6 *(25.2)* reverse 2.2 *(3.5)*, 7.9 *(12.7)* **Clutch** dual plate dry disc operated by foot pedal **Brakes** contracting band operated by two foot pedals which can be locked together and hand lever **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 109" *(2.77 m)* left 109" *(2.77 m)* (on concrete surface without brake) right 124" *(3.15 m)* left 124" *(3.15 m)* **Turning space diameter** (on concrete surface with brake applied) right 225" *(5.71 m)* left 225" *(5.71 m)* (on concrete surface without brake) right 255" *(6.48 m)* left 255" *(6.48 m)* **Power take-off** 540 rpm at 2100 engine rpm.

REPAIRS and ADJUSTMENTS: The left rear axle oil seal was replaced after break-in period. Missing air baffles above radiator were installed during preliminary PTO test. The throttle lever friction disc was tightened after the PTO test.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump was maintained at 155°F *(68.2°C)*. Five gears were chosen between 15% slip and 10 mph *(16.1 km/h)*.

TRACTOR SOUND LEVEL WITHOUT CAB	dB(A)
Maximum Available Power—Two Hours	100.0
75% of Pull at Maximum Power—Ten Hours	98.0
50% of Pull at Maximum Power—Two Hours	96.5
50% of Pull at Reduced Engine Speed—Two Hours	93.5
Bystander in 8th gear	89.0

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi (kPa)	Two 14.9-28; 6; 20 (140)	Two 14.9-28; 6; 20 (140)
Ballast	—Liquid (each)	680 lb (308 kg)	None
	—Cast Iron (each)	815 lb (370 kg)	None
Front Tires	—No., size, ply & psi (kPa)	Two 7.50-16; 6; 28 (193)	Two 7.50-16; 6; 28 (193)
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	468 lb (212 kg)	None
Height of Drawbar		20.5 in (520 mm)	20.5 in (520 mm)
Static Weight with Operator—Rear		5815 lb (2638 kg)	2825 lb (1281 kg)
	—Front	2395 lb (1086 kg)	1460 lb (662 kg)
	—Total	8210 lb (3724 kg)	4285 lb (1943 kg)

Long 510 Diesel

We, the undersigned, certify that this is a true and correct report of official Tractor Test 1415.

LOUIS I. LEVITICUS
Engineer-in Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Roy G. Arnold, Director

NEBRASKA TRACTOR TEST 1416 — LONG 510 DTC DIESEL 8 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—600 rpm)								
40.35 (30.09)	2400	3.077 (11.648)	0.430 (0.261)	16.04 (3.159)	214 (101.1)	54 (12.3)	75 (24.0)	29.005 (97.940)
Standard Power Take-off Speed (540 rpm)—One Hour								
46.41 (34.61)	2160	2.818 (10.667)	0.418 (0.255)	16.47 (3.245)	214 (100.9)	55 (12.7)	75 (23.8)	28.985 (97.878)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
43.41 (32.37)	2484	2.668 (10.099)	0.424 (0.258)	16.27 (3.205)	202 (94.4)	56 (12.8)	76 (24.4)	…… ……
0.00 (0.00)	2504	0.792 (2.998)	…… ……	…… ……	168 (75.6)	55 (12.5)	75 (23.9)	…… ……
21.68 (16.17)	2478	1.619 (6.129)	0.515 (0.313)	13.39 (2.638)	173 (78.3)	54 (12.2)	74 (23.1)	…… ……
49.56 (36.96)	2400	3.138 (11.879)	0.436 (0.266)	15.79 (3.111)	204 (95.3)	56 (13.1)	76 (24.2)	…… ……
11.11 (8.28)	2544	1.210 (4.580)	0.751 (0.457)	9.18 (1.808)	169 (76.1)	55 (12.8)	75 (23.9)	…… ……
32.62 (24.47)	2505	2.129 (8.059)	0.447 (0.272)	15.42 (3.036)	179 (81.7)	55 (12.8)	75 (23.6)	…… ……
Av 26.43 Av (19.71)	2486	1.926 (7.291)	0.502 (0.306)	13.72 (2.703)	182 (83.4)	55 (12.7)	75 (23.8)	28.970 (97.827)

DRAWBAR PERFORMANCE (Front Wheel Dirve Disengaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 5th Gear											
40.95 (30.53)	3310 (14.72)	4.64 (7.46)	2400	7.72	2.991 (11.323)	0.504 (0.306)	13.68 (2.696)	183 (83.9)	48 (8.6)	59 (15.0)	29.065 (98.148)
75% of Pull at Maximum Power—Ten Hours 5th Gear											
33.23 (24.78)	2521 (11.21)	4.94 (7.96)	2510	5.94	2.498 (9.457)	0.518 (0.315)	[illegible] [illegible]	166 (75.3)	32 (-0.3)	40 (4.2)	29.411 (99.317)
50% of Pull at Maximum Power—Two Hours 5th Gear											
22.86 (17.05)	1689 (7.51)	5.08 (8.18)	2525	3.98	1.958 (7.412)	0.590 (0.359)	11.69 (2.302)	167 (75.0)	34 (1.1)	40 (4.2)	29.110 (98.300)
50% of Pull at Reduced Engine Speed—Two Hours 6th Gear											
22.87 (17.06)	1689 (7.51)	5.08 (8.17)	1679	4.01	1.632 (6.176)	0.492 (0.299)	14.02 (2.761)	168 (75.3)	42 (5.3)	50 (9.7)	29.095 (98.249)

MAXIMUM POWER IN SELECTED GEARS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Gear	Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
27.96 (20.85)	5635 (25.06)	1.86 (3.00)	2499	14.90	2nd Gear	169 (76.0)	52 (11.1)	63 (17.2)	28.900 (97.591)
38.87 (28.98)	5536 (24.62)	2.63 (4.24)	2400	14.33	3rd Gear	188 (86.7)	52 (11.1)	63 (17.2)	28.910 (97.625)
39.91 (29.76)	4195 (18.65)	3.57 (5.74)	2490	10.14	4th Gear	192 (88.9)	52 (11.1)	63 (17.2)	28.910 (97.625)
41.37 (30.85)	3354 (14.92)	4.63 (7.44)	2398	7.92	5th Gear	185 (85.0)	50 (10.0)	59 (15.0)	28.870 (97.490)
40.39 (30.12)	2108 (9.38)	7.18 (11.56)	2398	4.82	6th Gear	185 (85.0)	52 (11.1)	62 (16.7)	28.820 (97.321)

LUGGING ABILITY IN 5th GEAR

Crankshaft Speed rpm	2398	2161	1923	1680	1434	1195
Pull—lbs (kN)	3354 (14.92)	3506 (15.59)	3590 (15.97)	3674 (16.34)	3702 (16.47)	3532 (15.71)
Increase in Pull %	0	5	7	10	10	5
Power—Hp (kW)	41.37 (30.85)	38.72 (28.88)	35.20 (26.25)	31.55 (23.52)	26.95 (20.09)	21.52 (16.05)
Speed—Mph (km/h)	4.63 (7.44)	4.14 (6.67)	3.68 (5.92)	3.22 (5.18)	2.73 (4.39)	2.29 (3.68)
Slip %	7.92	8.47	8.80	8.91	8.91	8.69

Department of Agricultural Engineering

Dates of Test: October 29 to November 14, 1981

Manufacturer: UNIVERSAL TRACTOR BRASOV (UTB) Brasov, Romania

FUEL, OIL AND TIME: **Fuel** No. 2 Diesel **Cetane No.** 46.3 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60°** *(15°/15°)* 0.8281 **Fuel weight** 6.895 lbs/gal *(0.826 kg/l)* **Oil** Long engine oil **SAE** 15W-40 **API service classification** SF-CD **To motor** 2.059 gal *(7.795 l)* **Drained from motor** 1.301 gal *(4.924 l)* **Transmission lubricant** Exxon torque fluid 56 or equiv. **Final drive lubricant** SAE 90 gearlube **Total time engine was operated** 60.5 hours

ENGINE: **Make** UTB diesel **Type** three cylinder vertical **Serial No.** D-115.050*005174* **Crankshaft** lengthwise **Rated rpm** 2400 **Bore and stroke** 4.02" × 4.33" *(102 mm × 110 mm)* **Compression ratio** 17 to 1 **Displacement** 164.5 cu in *(2696 ml)* **Starting system** 12 volt **Lubrication pressure** **Air cleaner** oil bath with centrifugal precleaner **Oil filter** one full flow cartridge **Fuel filter** two paper elements **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: **Type** front wheel assist **Serial No.** 414764 **Tread width** rear 52.3" *(1327 mm)* to 76.3" *(1937 mm)* front 59.5"*(1511 mm)* **Wheel base** 75.2" *(1910 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 33.9" *(860 mm)* Vertical distance above roadway 28.5" *(724 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph** *(km/h)* first 1.4 *(2.2)* second 2.1 *(3.4)* third 3.1 *(4.9)* fourth 4.0 *(6.4)* fifth 5.0 *(8.1)* sixth 7.5 *(12.1)* seventh 11.0 *(17.8)* eighth 14.3 *(22.9)* reverse 2.0 *(3.2)*, 7.2 *(11.6)* **Clutch** dual plate dry disc operated by foot pedal **Brakes** contracting band operated by two foot pedals which can be locked together and hand lever **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 161" *(4.09 m)* left 161" *(4.09 m)* (on concrete surface without brake) right 173" *(4.39 m)* left 173" *(4.39 m)* **Turning space diameter** (on concrete surface with brake applied) right 332" *(8.43 m)* left 332" *(8.43 m)* (on concrete surface without brake) right 356" *(9.04 m)* left 356" *(9.04 m)* **Power take-off** 540 rpm at 2160 engine rpm.

REPAIRS and ADJUSTMENTS: The fuel pump was replaced during preliminary PTO tests. The missing air baffles above radiator were installed during preliminary PTO test.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump was maintained at 171°F *(77.2°C)*. Five gears were chosen between 15% slip and 10 mph *(16.1 km/h)*. A end of the tests, the instrument cluster sup were found to be broken.

We, the undersigned, certify that this is a true and correct report of official Tractor Test 1416.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

TRACTOR SOUND LEVEL WITHOUT CAB	dB(A)	Front Wheel Drive Disengaged dB(A)
Maximum Available Power—Two Hours	98.5	98.5
75% of Pull at Maximum Power—Ten Hours		97.0
50% of Pull at Maximum Power—Two Hours		95.5
50% of Pull at Reduced Engine Speed—Two Hours		92.0
Bystander in 8th gear		86.5

DRAWBAR PERFORMANCE (Front Wheel Drive Engaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 5th Gear											
40.01 (29.84)	3102 (13.80)	4.84 (7.78)	2399	6.58	3.064 (11.598)	0.528 (0.321)	13.06 (2.573)	183 (83.9)	[illegible] [illegible]	58 (14.4)	29.085 (98.216)
MAXIMUM POWER IN SELECTED GEARS											
33.32 (24.85)	6657 (29.61)	1.88 (3.03)	2449	14.89	2nd Gear			166 (74.4)	35 (1.7)	36 (2.2)	29.230 (98.705)
41.02 (30.59)	3180 (14.14)	4.84 (7.79)	2400	6.64	5th Gear			184 (84.4)	48 (8.9)	60 (15.6)	29.070 (98.165)

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi (kPa)	Two 14.9-28; 6; 20 (140)	Two 14.9-28; 6; 20 (140)
Ballast	—Liquid (each)	680 lb (308 kg)	None
	—Cast Iron (each)	838 lb (380 kg)	None
Front Tires	—No., size, ply & psi (kPa)	Two 9.5-20; 6; 35 (240)	Two 9.5-20; 6; 35 (240)
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	400 lb (181 kg)	None
Height of Drawbar		18.5 in (470 mm)	18.5 in (470 mm)
Static Weight with Operator—Rear		5990 lb (2717 kg)	2955 lb (1340 kg)
—Front		3110 lb (1411 kg)	2310 lb (1048 kg)
—Total		9100 lb (4128 kg)	5265 lb (2388 kg)

Long 510 DTC Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Roy G. Arnold, Director

NEBRASKA TRACTOR TEST 1417 — LONG 610 DIESEL
8 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—600 rpm)								
64.33 *(47.97)*	2400	4.192 *(15.868)*	0.449 *(0.273)*	15.34 *(3.023)*	232 *(110.8)*	62 *(16.6)*	75 *(23.9)*	28.810 *(97.287)*
Standard Power Take-off Speed (540 rpm)—One Hour								
60.57 *(45.17)*	2160	3.803 *(14.396)*	0.433 *(0.263)*	15.93 *(3.138)*	231 *(110.6)*	61 *(16.3)*	75 *(23.7)*	28.815 *(97.304)*
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
56.84 *(42.39)*	2402	3.546 *(13.423)*	0.430 *(0.262)*	16.03 *(3.158)*	214 *(100.8)*	62 *(16.4)*	75 *(23.9)*	....
0.00 *(0.00)*	2566	1.075 *(4.069)*	....	....	167 *(74.7)*	62 *(16.4)*	75 *(23.9)*	....
28.75 *(21.44)*	2524	2.158 *(8.169)*	0.518 *(0.315)*	13.32 *(2.625)*	174 *(78.9)*	61 *(16.1)*	75 *(23.6)*	....
65.50 *(48.84)*	2400	4.290 *(16.239)*	0.452 *(0.275)*	15.27 *(3.008)*	221 *(104.7)*	61 *(16.1)*	75 *(23.9)*	....
14.50 *(10.81)*	2545	1.566 *(5.928)*	0.745 *(0.453)*	9.26 *(1.824)*	174 *(78.6)*	61 *(16.1)*	75 *(23.6)*	....
42.80 *(31.92)*	2504	2.850 *(10.788)*	0.459 *(0.279)*	15.02 *(2.959)*	185 *(85.0)*	61 *(16.1)*	75 *(23.6)*	....
Av 34.73 ***Av*** *(25.90)*	2506	2.581 *(9.770)*	0.512 *(0.312)*	13.46 *(2.651)*	189 *(87.3)*	61 *(16.2)*	75 *(23.8)*	28.820 *(97.321)*

DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 5th Gear											
56.12 *(41.85)*	3922 *(17.45)*	5.37 *(8.64)*	2401	6.66	4.133 *(15.647)*	0.508 *(0.309)*	13.58 *(2.675)*	193 *(89.2)*	47 *(8.1)*	53 *(11.7)*	29.090 *(98.233)*
75% of Pull at Maximum Power—Ten Hours 5th Gear											
45.52 *(33.94)*	3013 *(13.40)*	5.67 *(9.12)*	2455	4.90	3.368 *(12.751)*	0.510 *(0.310)*	13.51 *(2.662)*	171 *(77.2)*	42 *(5.6)*	52 *(11.0)*	29.135 *(98.385)*
50% of Pull at Maximum Power—Two Hours 5th Gear											
31.33 *(23.36)*	2023 *(9.00)*	5.81 *(9.35)*	2509	3.46	2.629 *(9.951)*	0.579 *(0.352)*	11.92 *(2.348)*	169 *(75.8)*	45 *(6.9)*	55 *(12.3)*	29.105 *(98.283)*
50% of Pull at Reduced Engine Speed—Two Hours 6th Gear											
31.30 *(23.34)*	2019 *(8.98)*	5.81 *(9.36)*	1668	3.43	2.175 *(8.233)*	0.479 *(0.291)*	14.39 *(2.835)*	167 *(75.0)*	43 *(6.1)*	53 *(11.4)*	29.110 *(98.300)*

MAXIMUM POWER IN SELECTED GEARS

39.90 *(29.75)*	7018 *(31.22)*	2.13 *(3.43)*	?491	14.58	2nd Gear			152 *(66.7)*	38 *(3.3)*	41 *(5.0)*	28.930 *(97.692)*
53.30 *(39.75)*	6620 *(29.45)*	3.02 *(4.86)*	2401	14.28	3rd Gear			180 *(81.9)*	46 *(7.8)*	50 *(10.0)*	29.070 *(98.165)*
55.98 *(41.73)*	5065 *(22.53)*	4.15 *(6.67)*	2401	8.90	4th Gear			186 *(85.6)*	46 *(7.8)*	49 *(9.4)*	29.060 *(98.131)*
57.48 *(42.86)*	4015 *(17.86)*	5.37 *(8.64)*	2397	6.45	5th Gear			187 *(85.8)*	45 *(7.2)*	47 *(8.3)*	29.040 *(98.064)*
56.32 *(42.00)*	2549 *(11.34)*	8.29 *(13.34)*	2399	4.19	6th Gear			187 *(85.8)*	47 *(8.3)*	51 *(10.6)*	29.080 *(98.199)*

LUGGING ABILITY IN 5th GEAR

Crankshaft Speed rpm	2397	2163	1917	1686	1438	1196	955
Pull—lbs *(kN)*	4015 *(17.86)*	4161 *(18.51)*	4317 *(19.20)*	4468 *(19.87)*	4594 *(20.44)*	4672 *(20.78)*	4495 *(19.99)*
Increase in Pull %	0	4	8	11	14	16	12
Power—Hp *(kW)*	57.48 *(42.86)*	53.57 *(39.95)*	49.04 *(36.57)*	44.49 *(33.18)*	38.93 *(29.03)*	32.83 *(24.48)*	25.32 *(18.88)*
Speed—Mph *(km/h)*	5.37 *(8.64)*	4.83 *(7.77)*	4.26 *(6.86)*	3.73 *(6.01)*	3.18 *(5.11)*	2.64 *(4.24)*	2.11 *(3.40)*
Slip %	6.45	6.99	7.54	7.57	7.81	8.15	7.81

Department of Agricultural Engineering

Dates of Test: October 27 to November 10, 1981

Manufacturer: UNIVERSAL TRACTOR BRASOV (UTB) Brasov, Romania

FUEL, OIL AND TIME: **Fuel** No. 2 Diesel **Cetane No.** 46.3 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60°** *(15°/15°)* 0.8281 **Fuel weight** 6.895 lbs/gal *(0.826 kg/l)* **Oil** Long engine oil **SAE** 15W-40 **API service classification** SF-CD **To motor** 3.358 gal *(12.710 l)* **Drained from motor** 2.120 gal *(8.024 l)* **Transmission lubricant** Exxon torque fluid 56 or equiv. **Final drive lubricant** SAE 90 gearlube **Total time engine was operated** 40.0 hours

ENGINE: **Make** UTB diesel **Type** four cylinder vertical **Serial No.** D-121.050*004844* **Crankshaft** lengthwise **Rated rpm** 2400 **Bore and stroke** 4.02" × 4.33" *(102 mm × 110 mm)* **Compression ratio** 17 to 1 **Displacement** 219 cu in *(3595 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** oil bath with centrifugal precleaner **Oil filter** one full flow cartridge **Fuel filter** two paper elements **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: **Type** standard **Serial No.** 660679 **Tread width** rear 56.3" *(1430 mm)* to 79" *(2007 mm)* front 52" *(1320 mm)* to 79" *(2007 mm)* **Wheel base** 81.5" *(2070 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 30.8" *(783 mm)* Vertical distance above roadway 29.8" *(756 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph** *(km/h)* first 1.6 *(2.5)* second 2.3 *(3.8)* third 3.4 *(5.5)* fourth 4.4 *(7.1)* fifth 5.6 *(9.0)* sixth 8.4 *(13.5)* seventh 12.3 *(19.8)* eighth 15.9 *(25.6)* reverse 2.2 *(3.6)*, 8.0 *(12.9)* **Clutch** dual plate dry disc operated by foot pedal **Brakes** contracting band operated by two foot pedals which can be locked together and hand lever **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 119" *(3.02 m)* left 119" *(3.02 m)* (on concrete surface without brake) right 131" *(3.33 m)* left 131" *(3.33 m)* **Turning space diameter** (on concrete surface with brake applied) right 248" *(6.3 m)* left 248" *(6.3 m)* (on concrete surface without brake) right 272" *(6.91 m)* left 272" *(6.91 m)* **Power take-off** 540 rpm at 2160 engine rpm.

REPAIRS and ADJUSTMENTS: The fuel filters were replaced during preliminary PTO tests.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump was maintained at 171°F *(77.3°C)*. Five gears were chosen between tire tangential pull limit and 10 mph *(16.1 km/h)*. Oil leaked from the crankshaft rear main oil seal during test. During final inspection, number three cylinder was found to be scratched.

We, the undersigned, certify that this is a true and correct report of official Tractor Test 1417.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

TRACTOR SOUND LEVEL WITHOUT CAB	dB(A)
Maximum Available Power—Two Hours	96.5
75% of Pull at Maximum Power—Ten Hours	96.5
50% of Pull at Maximum Power—Two Hours	96.0
50% of Pull at Reduced Engine Speed—Two Hours	92.5
Bystander in 8th gear	88.5

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi *(kPa)*	Two 16.9-28; 6; 18 *(125)*	Two 16.9-28; 6; 18 *(125)*
Ballast	—Liquid (each)	895 lb *(406 kg)*	None
	—Cast Iron (each)	838 lb *(380 kg)*	None
Front Tires	—No., size, ply & psi *(kPa)*	Two 7.50-16SL; 6; 32 *(220)*	Two 7.50-16SL; 6; 32 *(220)*
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	415 lb *(187 kg)*	None
Height of Drawbar		21 in *(535 mm)*	21 in *(535 mm)*
Static Weight with Operator—Rear		6430 lb *(2917 kg)*	2965 lb *(1345 kg)*
	—Front	2555 lb *(1159 kg)*	1730 lb *(785 kg)*
	—Total	8985 lb *(4076 kg)*	4695 lb *(2130 kg)*

Long 610 Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Roy G. Arnold, Director

NEBRASKA TRACTOR TEST 1419 — INTERNATIONAL 5088 DIESEL
18 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1005 rpm)								
136.12 (101.50)	2400	8.888 (33.645)	0.450 (0.274)	15.32 (3.017)	185 (85.0)	53 (11.7)	75 (23.9)	28.943 (97.737)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
121.46 (90.57)	2518	8.468 (32.055)	0.480 (0.292)	14.34 (2.825)	184 (84.4)	53 (11.7)	75 (23.9)	......
0.00 (0.00)	2671	3.278 (12.409)	.....	.....	182 (83.3)	53 (11.7)	75 (23.9)	......
62.66 (46.73)	2598	5.842 (22.114)	0.643 (0.391)	10.73 (2.113)	183 (83.9)	53 (11.7)	76 (24.2)	......
136.27 (101.62)	2400	8.890 (33.652)	0.450 (0.274)	15.33 (3.020)	186 (85.6)	52 (11.1)	75 (23.9)	......
31.85 (23.75)	2640	4.606 (17.436)	0.997 (0.606)	6.91 (1.362)	182 (83.3)	52 (10.8)	74 (23.3)	......
92.61 (69.06)	2560	7.105 (26.895)	0.529 (0.322)	13.03 (2.568)	184 (84.4)	53 (11.4)	76 (24.2)	......
Av 74.14 Av (55.29)	2504	6.365 (24.094)	0.592 (0.360)	11.65 (2.295)	184 (84.2)	53 (11.4)	75 (23.9)	28.910 (97.625)

DRAWBAR PERFORMANCE WITH RADIAL PLY TIRES

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 9th (M3) Gear											
116.19 (86.65)	8611 (38.31)	5.06 (8.14)	2400	3.19	8.780 (33.234)	0.521 (0.317)	13.23 (2.607)	180 (82.2)	54 (11.9)	68 (20.0)	28.805 (97.270)
75% of Pull at Maximum Power—Ten Hours 9th (M3) Gear											
97.36 (72.60)	6748 (30.02)	5.41 (8.71)	2547	2.66	8.083 (30.598)	0.572 (0.348)	12.04 (2.373)	176 (80.1)	40 (4.3)	44 (6.4)	28.887 (97.547)
50% of Pull at Maximum Power—Two Hours 9th (M3) Gear											
66.78 (49.80)	4510 (20.06)	5.55 (8.94)	2594	1.95	6.748 (25.544)	0.696 (0.424)	9.90 (1.949)	178 (80.8)	36 (2.2)	38 (3.3)	28.595 (96.560)
50% of Pull at Reduced Engine Speed—Two Hours 13th (H1) Gear											
66.87 (49.87)	4517 (20.09)	5.55 (8.94)	1559	1.95	4.861 (18.402)	0.501 (0.305)	13.76 (2.710)	178 (80.8)	37 (2.8)	39 (3.9)	28.610 (96.612)

MAXIMUM POWER IN SELECTED GEARS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %		Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
99.26 (74.02)	14960 (66.55)	2.49 (4.00)	2510	14.30	5th (L5) Gear	178 (81.1)	45 (7.2)	55 (12.8)	28.730 (97.017)
114.17 (85.14)	14357 (63.86)	2.98 (4.80)	2398	8.56	6th (L6) Gear	178 (81.1)	45 (7.2)	54 (12.2)	28.760 (97.118)
119.92 (89.42)	12217 (54.34)	3.68 (5.92)	2399	5.23	7th (M1) Gear	180 (81.9)	51 (10.6)	62 (16.7)	28.860 (97.456)
120.49 (89.85)	10310 (45.86)	4.38 (7.05)	2399	4.05	8th (M2) Gear	180 (81.9)	50 (10.0)	60 (15.6)	28.870 (97.490)
121.17 (90.36)	8986 (39.97)	5.06 (8.14)	2399	3.32	9th (M3) Gear	180 (81.9)	52 (11.1)	64 (17.8)	28.840 (97.388)
120.56 (89.90)	7559 (33.63)	5.98 (9.62)	2398	2.74	10th (M4) Gear	180 (82.2)	52 (11.1)	63 (17.2)	28.850 (97.422)
119.01 (88.75)	6402 (28.48)	6.97 (11.22)	2399	2.41	11th (M5) Gear	179 (81.7)	46 (7.8)	54 (12.2)	28.880 (97.523)
117.22 (87.41)	5340 (23.75)	8.23 (13.25)	2400	1.91	12th (M6) Gear	179 (81.7)	48 (8.9)	57 (13.9)	28.880 (97.523)

LUGGING ABILITY IN 9th (M3) GEAR

Crankshaft Speed rpm	2399	2159	1924	1677	1432	1196
Pull—lbs (kN)	8986 (39.97)	10381 (46.18)	11373 (50.59)	11589 (51.55)	10894 (48.46)	10201 (45.38)
Increase in Pull %	0	16	27	29	21	14
Power—Hp (kW)	121.17 (90.36)	125.10 (93.28)	121.42 (90.54)	107.61 (80.25)	86.79 (64.72)	68.12 (50.79)
Speed—Mph (km/h)	5.06 (8.14)	4.52 (7.27)	4.00 (6.44)	3.48 (5.60)	2.99 (4.81)	2.50 (4.03)
Slip %	3.32	3.97	4.45	4.76	4.29	3.97

Department of Agricultural Engineering

Dates of Test: November 12-December 8, 1981

Manufacturer: INTERNATIONAL HARVESTER COMPANY 401 North Michigan Avenue, Chicago, IL 60611

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 46.3 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60°** *(15°/15°)* 0.8276 **Fuel weight** 6.891 lbs/gal *(0.826 kg/l)* **Oil SAE** 30 **API service classification** CD/SE **To motor** 4.127 gal *(15.622 l)* **Drained from motor** 3.775 gal *(14.291 l)* **Transmission and final drive lubricant** IH Hytran fluid **Total time engine was operated** 73.5 hours.

ENGINE: Make International Diesel **Type** six cylinder vertical with turbocharger **Serial No.** 437TT2U128248* **Crankshaft** lengthwise **Rated rpm** 2400 **Bore and stroke** 4.30" × 5.00" *(109.2 mm × 127.0 mm)* **Compression ratio** 15.4 to 1 **Displacement** 436 cu in *(7145 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements with aspirator **Oil filter** two full flow cartridges **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** two paper cartridges **Muffler** underhood **Exhaust** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: Type standard with duals **Serial No.** 2540002U000872* **Tread width** rear 62" *(1575 mm)* to 124" *(3150 mm)* front 60" *(1524 mm)* to 84" *(2134 mm)* **Wheel base** 111.6" *(2835 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 27.8" *(706 mm)* Vertical distance above roadway 39.0" *(991 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (2) range operator controlled powershift **Advertised speeds mph** *(km/h)* first 1.4 *(2.3)* second 1.7 *(2.7)* third 1.9 *(3.1)* fourth 2.3 *(3.6)* fifth 2.6 *(4.2)* sixth 3.1 *(5.0)* seventh 3.7 *(5.9)* eighth 4.3 *(7.0)* ninth 5.0 *(8.0)* tenth 5.8 *(9.4)* eleventh 6.8 *(10.9)* twelfth 7.9 *(12.8)* thirteenth 8.2 *(13.3)* fourteenth 9.7 *(15.6)* fifteenth 11.1 *(17.9)* sixteenth 13.1 *(21.0)* seventeenth 15.2 *(24.4)* eighteenth 17.8 *(28.7)* reverse 2.8 *(4.4)*, 3.2 *(5.2)*, 3.7 *(6.0)*, 4.4 *(7.0)*, 5.1 *(8.1)*, 6.0 *(9.6)* **Clutch** multiple wet disc operated by foot pedal with hydraulic power assist **Brakes** multiple wet disc hydraulically power activated and operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 145.5" *(3.70 m)* left 145.5" *(3.70 m)* (on concrete surface without brake) right 188" *(4.78 m)* left 188" *(4.78 m)* **Turning space diameter** (on concrete surface with brake applied) right 302" *(7.68 m)* left 302" *(7.68 m)* (on concrete surface without brake) right 387.1" *(9.83 m)* left 387.1" *(9.83 m)* **Power take-off** 1005 rpm at 2400 engine rpm and 540 rpm at 2428 engine rpm.

TRACTOR SOUND LEVEL WITH CAB	Bias dB(A)	Radials dB(A)
Maximum Available Power—Two Hours	78.5	78.0
75% of Pull at Maximum Power—Ten Hours		78.5
50% of Pull at Maximum Power—Two Hours		78.5
50% of Pull at Reduced Engine Speed—Two Hours		74.5
Bystander in 18th (H6) gear		85.0

DRAWBAR PERFORMANCE WITH BIAS PLY TIRES

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 9th (M3) Gear											
114.14 (85.11)	9214 (40.99)	4.65 (7.48)	2399	6.76	8.925 (33.784)	0.539 (0.328)	12.79 (2.519)	178 (81.1)	49 (9.2)	57 (13.9)	28.885 (97.540)

MAXIMUM POWER IN SELECTED GEARS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %		Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
100.42 (74.88)	13571 (60.37)	2.77 (4.47)	2509	14.50	6th (L6) Gear	177 (80.6)	40 (4.4)	52 (11.1)	28.820 (97.320)
110.88 (82.68)	12969 (57.69)	3.21 (5.16)	2399	13.36	7th (M1) Gear	179 (81.7)	36 (2.2)	42 (5.6)	29.010 (97.962)
116.41 (86.80)	10993 (48.90)	3.97 (6.39)	2399	8.56	8th (M2) Gear	178 (81.1)	37 (2.8)	43 (6.1)	28.990 (97.895)
118.46 (88.34)	9573 (42.58)	4.64 (7.47)	2397	6.79	9th (M3) Gear	178 (81.1)	39 (3.9)	44 (6.7)	28.930 (97.692)
118.17 (88.12)	7996 (35.57)	5.54 (8.92)	2400	5.40	10th (M4) Gear	177 (80.6)	38 (3.3)	45 (7.2)	28.950 (97.760)
115.84 (86.38)	6695 (29.78)	6.49 (10.44)	2398	4.43	11th (M5) Gear	176 (79.7)	39 (3.9)	45 (7.2)	28.950 (97.760)
114.88 (85.66)	5600 (24.91)	7.69 (12.38)	2399	3.58	12th (M6) Gear	178 (81.1)	39 (3.9)	45 (7.2)	28.940 (97.726)
115.45 (86.09)	5408 (24.06)	8.00 (12.88)	2399	3.51	13th (H1) Gear	175 (79.4)	39 (3.9)	44 (6.7)	28.940 (97.726)

LUGGING ABILITY IN 9th (M3) GEAR

Crankshaft Speed rpm	2397	2161	1921	1688	1457	1205
Pull—lbs (kN)	9573 (42.58)	10962 (48.76)	12190 (54.22)	12563 (55.88)	11823 (52.59)	11088 (49.32)
Increase in Pull %	0	15	27	31	24	16
Power—Hp (kW)	118.46 (88.34)	120.01 (89.49)	116.26 (86.70)	103.02 (76.83)	84.26 (62.83)	67.51 (50.34)
Speed—Mph (km/h)	4.64 (7.47)	4.11 (6.61)	3.58 (5.76)	3.08 (4.95)	2.67 (4.30)	2.28 (3.67)
Slip %	6.79	8.49	10[illegible]	12.25	10.40	8.77

REPAIRS and ADJUSTMENTS: The thermostat malfunctioned at the start of the 50% load drawbar test. It was removed, checked and reinstalled and the test rerun.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump return was maintained at 141°F *(60.8°C)*. Eight gears were chosen between 15% slip and 10 mph *(16.1 km/h)*.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1419.**

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

International 5088 Diesel

TIRES, BALLAST AND WEIGHT		Radial Ply Tires With Ballast	Radial Ply Tires Without Ballast	Bias Ply Tires With Ballast	Bias Ply Tires Without Ballast
Rear Tires	—No., size, ply & psi (kPa)	Inner two 18.4R38; 8; 12 (85) Outer two 18.4R38; 6; 12 (85)	Inner two 18.4R38; 8; 12 (85) Outer two 18.4R38; 6; 12 (85)	Inner two 18.4-38; 8; 12 (85) Outer two 18.4-38; 6; 12 (85)	Inner two 18.4-38; 8; 12 (85) Outer two 18.4-38; 6; 12 (85)
Ballast	—Liquid (each inner)	None	None	355 lb (161 kg)	None
	—Test equip. (each)	40 lb (18 kg)	None	40 lb (18 kg)	None
Front Tires	—No., size, ply & psi (kPa)	Two 10.00-16; 6; 32 (220)	Two 10.00-16; 6; 32 (220)	Two 10.00-16; 6; 32 (220)	Two 10.00-16; 6; 32 (220)
Ballast	—Liquid (each)	None	None	None	None
	—Test equip. (each)	40 lb (18 kg)	None	40 lb (18 kg)	None
Height of Drawbar		20.5 lb (520 mm)	20.5 in (520 mm)	19.5 in (495 mm)	19.5 in (495 mm)
Static Weight with Operator	—Rear	12200 lb (5534 kg)	12040 lb (5461 kg)	12490 lb (5665 kg)	11620 lb (5271 kg)
	—Front	4050 lb (1837 kg)	3970 lb (1801 kg)	4050 lb (1837 kg)	3970 lb (1801 kg)
	—Total	16250 lb (7371 kg)	16010 lb (7262 kg)	16540 lb (7502 kg)	15590 lb (7072 kg)

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Roy G. Arnold, Director

NEBRASKA TRACTOR TEST 1420 — INTERNATIONAL 5288 DIESEL 18 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1005 rpm)								
162.60 *(121.25)*	2400	10.120 *(38.308)*	0.429 *(0.261)*	16.07 *(3.165)*	188 *(86.4)*	50 *(10.2)*	75 *(23.8)*	29.177 *(98.525)*
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
141.13 *(105.24)*	2451	9.173 *(34.724)*	0.448 *(0.272)*	15.39 *(3.031)*	187 *(85.8)*	51 *(10.5)*	74 *(23.3)*	....
0.00 *(0.00)*	2646	3.339 *(12.639)*	....	....	182 *(83.3)*	51 *(10.5)*	75 *(23.6)*	....
73.66 *(54.93)*	2557	6.278 *(23.765)*	0.587 *(0.357)*	11.73 *(2.311)*	184 *(84.4)*	51 *(10.6)*	76 *(24.2)*	....
162.12 *(120.89)*	2400	10.109 *(38.267)*	0.430 *(0.261)*	16.04 *(3.159)*	189 *(86.9)*	51 *(10.6)*	76 *(24.2)*	....
37.41 *(27.90)*	2606	4.802 *(18.178)*	0.885 *(0.538)*	7.79 *(1.535)*	182 *(83.3)*	51 *(10.6)*	75 *(23.9)*	....
108.20 *(80.68)*	2508	7.719 *(29.220)*	0.492 *(0.299)*	14.02 *(2.761)*	184 *(84.2)*	51 *(10.6)*	75 *(23.6)*	....
Av 87.09 *Av (64.94)*	**2528**	**6.903** *(26.131)*	**0.546** *(0.332)*	**12.62** *(2.485)*	**184** *(84.3)*	**51** *(10.4)*	**75** *(23.8)*	**29.107** *(98.289)*

DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 9th (M3) Gear											
137.63 *(102.63)*	9801 *(43.60)*	5.27 *(8.47)*	2399	3.07	10.049 *(38.041)*	0.505 *(0.306)*	13.70 *(2.698)*	180 *(82.2)*	46 *(7.8)*	51 *(10.5)*	28.495 *(96.223)*
75% of Pull at Maximum Power—Ten Hours 9th (M3) Gear											
111.43 *(83.09)*	7605 *(33.83)*	5.49 *(8.84)*	2485	2.30	8.729 *(33.042)*	0.540 *(0.328)*	12.77 *(2.515)*	178 *(81.2)*	33 *(0.3)*	36 *(2.3)*	28.973 *(97.837)*
50% of Pull at Maximum Power—Two Hours 9th (M3) Gear											
76.85 *(57.31)*	5092 *(22.65)*	5.66 *(9.11)*	2541	1.56	7.147 *(27.054)*	0.641 *(0.390)*	10.75 *(2.118)*	176 *(79.7)*	42 *(5.6)*	46 *(7.8)*	28.770 *(97.152)*
50% of Pull at Reduced Engine Speed—Two Hours 13th (H1) Gear											
76.64 *(57.15)*	5083 *(22.61)*	5.65 *(9.10)*	1524	1.51	5.333 *(20.188)*	0.480 *(0.292)*	14.37 *(2.831)*	176 *(80.0)*	46 *(9.3)*	53 *(11.7)*	28.760 *(97.118)*
MAXIMUM POWER IN SELECTED GEARS											
117.48 *(87.60)*	17577 *(78.19)*	2.51 *(4.03)*	2431	14.27	5th (L5) Gear			181 *(82.5)*	56 *(13.3)*	65 *(18.3)*	28.410 *(95.936)*
136.62 *(101.88)*	16175 *(71.95)*	3.17 *(5.10)*	2400	6.59	6th (L6) Gear			181 *(82.5)*	56 *(13.3)*	65 *(18.3)*	28.400 *(95.903)*
141.22 *(105.31)*	13775 *(61.28)*	3.84 *(6.19)*	2399	4.57	7th (M1) Gear			181 *(82.5)*	56 *(13.3)*	65 *(18.3)*	28.400 *(95.903)*
141.14 *(105.25)*	11589 *(51.55)*	4.57 *(7.35)*	2398	3.57	8th (M2) Gear			181 *(82.8)*	56 *(13.3)*	63 *(17.2)*	28.390 *(95.869)*
142.37 *(106.16)*	10133 *(45.08)*	5.27 *(8.48)*	2399	2.90	9th (M3) Gear			181 *(82.8)*	55 *(12.8)*	60 *(15.6)*	28.380 *(95.835)*
140.74 *(104.95)*	8494 *(37.78)*	6.21 *(10.00)*	2398	2.64	10th (M4) Gear			181 *(82.8)*	56 *(13.3)*	65 *(18.3)*	28.400 *(95.903)*
139.32 *(103.89)*	7201 *(32.03)*	7.26 *(11.68)*	2399	2.12	11th (M5) Gear			182 *(83.3)*	55 *(12.8)*	64 *(17.8)*	28.410 *(95.936)*
136.23 *(101.59)*	5968 *(26.55)*	8.56 *(13.78)*	2490	1.77	12th (M6) Gear			181 *(82.3)*	55 *(12.8)*	64 *(17.8)*	28.410 *(95.936)*

LUGGING ABILITY IN 9th (M3) GEAR

Crankshaft Speed rpm	2399	2158	1919	1675	1426	1201
Pull—lbs *(kN)*	10133 *(45.08)*	11420 *(50.80)*	12410 *(55.20)*	12936 *(57.34)*	12297 *(54.70)*	11250 *(50.04)*
Increase in Pull %	0	13	22	28	21	11
Power—Hp *(kW)*	142.37 *(106.16)*	143.57 *(107.06)*	138.20 *(103.06)*	125.32 *(93.45)*	101.66 *(75.81)*	78.69 *(58.68)*
Speed—Mph *(km/h)*	5.27 *(8.48)*	4.71 *(7.59)*	4.18 *(6.72)*	3.63 *(5.85)*	3.10 *(4.99)*	2.62 *(4.22)*
Slip %	2.90	3.41	3.91	4.24	3.91	3.41

Department of Agricultural Engineering

Dates of Test: November 13-24, 1981

Manufacturer: INTERNATIONAL HARVESTER COMPANY, 401 North Michigan Avenue, Chicago, IL 60611

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 46.3 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60°** *(15°/15°)* 0.8276 **Fuel weight** 6.891 lbs/gal *(0.826 kg/l)* **Oil SAE** 30 **API service classification** CD/SE **To motor** 4.156 gal *(15.731 l)* **Drained from motor** 3.547 gal *(13.428 l)* **Transmission and final drive lubricant** I.H. Hytran fluid **Total time engine was operated** 40.5 hours

ENGINE: Make International Diesel **Type** six cylinder vertical with turbocharger **Serial No.** 467TT2U160101* **Crankshaft** lengthwise **Rated rpm** 2400 **Bore and stroke** 4.30" × 5.35" *(109.2 mm × 135.9 mm)* **Compression ratio** 15.4 to 1 **Displacement** 466 cu in *(7636 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements with aspirator **Oil filter** two full flow cartridges **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** two paper cartridges **Muffler** underhood **Exhaust** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: Type standard with duals **Serial No.** 2580002U000942* **Tread width** rear 64" *(1625 mm)* to 128" *(3250 mm)* front 62.5" *(1588 mm)* to 86.5" *(2197 mm)* **Wheel base** 111.6" *(2835 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 27.3" *(693 mm)* Vertical distance above roadway 38.9" *(988 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (2) range operator controlled powershift **Advertised speeds mph** *(km/h)* first 1.5 *(2.4)* second 1.7 *(2.8)* third 2.0 *(3.2)* fourth 2.3 *(3.8)* fifth 2.7 *(4.4)* sixth 3.2 *(5.2)* seventh 3.8 *(6.1)* eighth 4.5 *(7.2)* ninth 5.1 *(8.3)* tenth 6.0 *(9.7)* eleventh 7.0 *(11.3)* twelfth 8.2 *(13.3)* thirteenth 8.5 *(13.7)* fourteenth 10.0 *(16.1)* fifteenth 11.5 *(18.6)* sixteenth 13.5 *(21.7)* seventeenth 15.6 *(25.2)* eighteenth 18.4 *(29.6)* reverse 2.9 *(4.6)*, 3.3 *(5.4)*, 3.8 *(6.2)*, 4.5 *(7.3)*, 5.2 *(8.4)*, 6.1 *(9.9)* **Clutch** multiple wet disc operated by foot pedal with hydraulic power assist **Brakes** multiple wet disc hydraulically power actuated and operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 151.1" *(3.84 m)* left 151.1" *(3.84 m)* (on concrete surface without brake) right 199.5" *(5.07 m)* left 199.5" *(5.07 m)* **Turning space diameter** (on concrete surface with brake applied) right 316" *(8.03 m)* left 316" *(8.03 m)* (on concrete surface without brake) right 412.8" *(10.49 m)* left 412.8" *(10.49 m)* **Power take-off** 1005 rpm at 2400 engine rpm.

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

TRACTOR SOUND LEVEL WITH CAB	dB(A)
Maximum Available Power—Two Hours	77.0
75% of Pull at Maximum Power—Ten Hours	77.5
50% of Pull at Maximum Power—Two Hours	77.5
50% of Pull at Reduced Engine Speed—Two Hours	73.5
Bystander in 18th (H6) gear	86.0

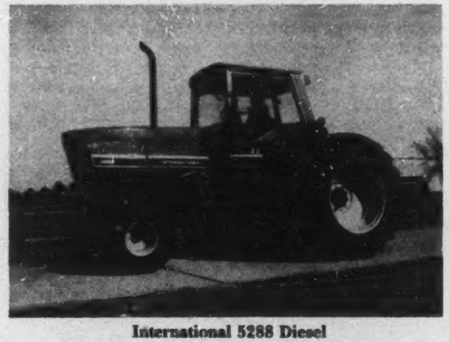
TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi *(kPa)*	Inner two 20.8R38; 10; 12 *(85)* Outer two 20.8R38; 8; 12 *(85)*	Inner two 20.8R38; 10; 12 *(85)* Outer two 20.8R38; 8; 12 *(85)*
Ballast	—Liquid (each inner)	760 lb *(345 kg)*	None
	—Cast Iron (each)	None	None
Front Tires	—No., size, ply & psi *(kPa)*	Two 14L-16.1; 6; 28 *(195)*	Two 14L-16.1; 6; 28 *(195)*
Ballast	—Liquid (each)	None	None
	—Test equip. (each)	5 lb *(2 kg)*	None
Height of Drawbar		20.5 in *(520 mm)*	20.5 in *(520 mm)*
Static Weight with Operator	—Rear	14425 lb *(6543 kg)*	12905 lb *(5854 kg)*
	—Front	4160 lb *(1887 kg)*	4150 lb *(1882 kg)*
	—Total	18585 lb *(8430 kg)*	17055 lb *(7736 kg)*

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump return was maintained at 128°F *(53.3°C)*. Eight gears were chosen between 15% slip and 10 mph *(16.1 km/h)*.

We, the undersigned, certify that this is a true and correct report of official Tractor Test **1420**.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers



International 5288 Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Roy G. Arnold, Director

NEBRASKA TRACTOR TEST 1421 — FORD 2610 (8 X 2) DIESEL 8 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank-shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—597 rpm)								
36.69 (27.36)	2000	2.338 (8.850)	0.439 (0.267)	15.69 (3.092)	198 (92.4)	52 (11.2)	75 (24.0)	28.970 (97.827)
Standard Power Take-off Speed (540 rpm)—One Hour								
35.14 (26.20)	1809	2.176 (8.237)	0.427 (0.260)	16.15 (3.181)	201 (94.1)	53 (11.7)	75 (23.9)	28.950 (97.760)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
32.20 (24.01)	2066	2.084 (7.889)	0.446 (0.272)	15.45 (3.043)	188 (86.4)	54 (12.2)	75 (23.9)	....
0.00 (0.00)	2120	0.722 (2.733)	....	....	166 (74.4)	54 (12.5)	75 (23.9)	....
16.33 (12.18)	2095	1.348 (5.103)	0.569 (0.346)	12.11 (2.387)	172 (77.5)	54 (12.5)	75 (23.9)	....
37.31 (27.82)	2002	2.358 (8.926)	0.436 (0.265)	15.83 (3.117)	193 (89.4)	55 (12.8)	76 (24.2)	....
8.21 (6.12)	2106	1.013 (3.835)	0.851 (0.518)	8.10 (1.596)	168 (75.8)	55 (12.8)	76 (24.2)	....
24.34 (18.15)	2080	1.709 (6.469)	0.484 (0.295)	14.24 (2.806)	174 (79.2)	55 (12.8)	74 (23.6)	....
Av 19.73 Av (14.71)	2078	1.539 (5.826)	0.538 (0.327)	12.82 (2.525)	177 (80.4)	55 (12.4)	75 (23.8)	28.950 (97.760)

DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 5th Gear											
30.47 (22.72)	2070 (9.21)	5.52 (8.89)	1999	5.34	2.338 (8.850)	0.529 (0.322)	13.03 (2.567)	198 (91.9)	60 (15.6)	76 (24.4)	28.305 (95.852)
75% of Pull at Maximum Power—Ten Hours 5th Gear											
25.01 (18.65)	1631 (7.26)	5.75 (9.25)	2074	4.80	1.968 (7.451)	0.543 (0.330)	12.71 (2.503)	169 (75.9)	30 (−0.9)	32 (−0.3)	28.845 (97.405)
50% of Pull at Maximum Power—Two Hours 5th Gear											
17.14 (12.78)	1089 (4.84)	5.91 (9.50)	2097	3.49	1.631 (6.173)	0.656 (0.399)	10.51 (2.070)	165 (73.9)	34 (0.8)	34 (1.1)	29.155 (98.452)
50% of Pull at Reduced Engine Speed—Two Hours 6th Gear											
17.14 (12.78)	1089 (4.84)	5.90 (9.50)	1679	3.35	1.414 (5.351)	0.569 (0.346)	12.13 (2.389)	166 (74.4)	34 (1.1)	35 (1.7)	29.085 (98.216)
MAXIMUM POWER IN SELECTED GEARS											
21.57 (16.08)	4473 (19.89)	1.81 (2.91)	2084	14.80	2nd Gear			169 (76.1)	46 (7.8)	49 (9.4)	28.840 (97.388)
29.88 (22.28)	3476 (15.46)	3.22 (5.19)	2002	8.96	3rd Gear			201 (93.6)	62 (16.7)	79 (26.1)	28.340 (95.700)
31.02 (23.13)	2562 (11.39)	4.54 (7.31)	2000	6.71	4th Gear			199 (92.5)	61 (16.1)	76 (24.4)	28.330 (95.666)
31.45 (23.45)	2137 (9.50)	5.52 (8.88)	2001	5.45	5th Gear			190 (87.8)	58 (14.4)	69 (20.6)	28.310 (95.599)
31.02 (23.13)	1666 (7.41)	6.98 (11.24)	2000	4.10	8th Gear			195 (90.3)	60 (15.6)	73 (22.8)	28.320 (95.632)

Department of Agricultural Engineering

Dates of Test: March 17 to April 15, 1982

Manufacturer: FORD MOTOR COMPANY, Ford Tractor Operations, 2500 East Maple Road, Troy, Michigan 48084

FUEL, OIL AND TIME: **Fuel** No. 2 Diesel **Cetane No.** 46.5 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60°** *(15°/15°)* 0.8284 **Fuel weight** 6.897 lbs/gal *(0.827 kg/l)* **Oil SAE** 30 **API service classification** SE/SF-CC/CD **To motor** 1.447 gal *(5.476 l)* **Drained from motor** 1.089 gal *(4.121 l)* **Transmission and final drive lubricant** Ford 134 fluid **Total time engine was operated** 47.5 hours.

ENGINE: **Make** Ford Diesel **Type** three cylinder vertical **Serial No.** *B638764* **Crankshaft** lengthwise **Rated rpm** 2000 **Bore and stroke** 4.2" × 4.2" *(106.7 mm × 106.7 mm)* **Compression ratio** 17.3 to 1 **Displacement** 175 cu in *(2868 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements **Oil filter** one full flow paper cartridge **Oil cooler** radiator for hydraulic and rear axle oil **Fuel filter** one paper element **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: **Type** standard **Serial No.** *C680985* **Tread width** rear 56" *(1420 mm)* to 76" *(1930 mm)* front 52" *(1320 mm)* to 80" *(2032 mm)* **Wheel base** 75.8" *(1925 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 31.5" *(800 mm)* Vertical distance above roadway 25.2" *(640 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph** *(km/h)* first 1.7 *(2.7)* second 2.1 *(3.4)* third 3.6 *(5.8)* fourth 5.0 *(8.0)* fifth 5.9 *(9.5)* sixth 7.4 *(11.9)* seventh 13.0 *(20.9)* eighth 17.7 *(28.5)* reverse 2.4 *(3.9)*, 8.5 *(13.7)* **Clutch** single plate dry disc operated by foot pedal **Brakes** drum and shoe operated by two foot pedals which can be locked together **Steering** power assist **Turning radius** (on concrete surface with brake applied) right 117" *(2.97 m)* left 117" *(2.97 m)* (on concrete surface without brake) right 129" *(3.28 m)* left 129" *(3.28 m)* **Turning space diameter** (on concrete surface with brake applied) right 240" *(6.1 m)* left 240" *(6.1 m)* (on concrete surface without brake) right 267" *(6.8 m)* left 267" *(6.8 m)* **Power take-off** 540 rpm at 1809 engine rpm.

LUGGING ABILITY IN 5th GEAR

Crankshaft Speed rpm	2001	1803	1603	1407	1201	986
Pull—lbs (kN)	2137 (9.50)	2255 (10.03)	2326 (10.35)	2394 (10.65)	2422 (10.77)	2414 (10.74)
Increase in Pull %	0	6	9	12	13	13
Power—Hp (kW)	31.45 (23.45)	29.80 (22.22)	27.25 (20.32)	24.53 (18.29)	21.16 (15.78)	17.30 (12.90)
Speed—Mph (km/h)	5.52 (8.88)	4.96 (7.97)	4.39 (7.07)	3.84 (6.18)	3.28 (5.27)	2.69 (4.32)
Slip %	5.45	5.82	6.14	6.24	6.45	6.45

TRACTOR SOUND LEVEL WITHOUT CAB	dB(A)
Maximum Available Power—Two Hours	96.0
75% of Pull at Maximum Power—Ten Hours	96.0
50% of Pull at Maximum Power—Two Hours	95.0
50% of Pull at Reduced Engine Speed—Two Hours	93.5
Bystander in 8th gear	88.0

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi *(kPa)*	Two 14.9-24; 4; 14 *(95)*	Two 14.9-24; 4; 14 *(95)*
Ballast	—Liquid (each)	542 lb *(246 kg)*	None
	—Cast iron (each)	290 lb *(132 kg)*	None
Front Tires	—No., size, ply & psi *(kPa)*	Two 5.50-16; 4; 40 *(275)*	Two 5.50-16; 4; 40 *(275)*
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	58 lb *(26 kg)*	None
Height of Drawbar		16.5 in *(420 mm)*	16.5 in *(420 mm)*
Static Weight with Operator—Rear		4150 lb *(1882 kg)*	2485 lb *(1127 kg)*
—Front		1790 lb *(812 kg)*	1675 lb *(760 kg)*
—Total		5940 lb *(2694 kg)*	4160 lb *(1887 kg)*

Ford 2610 (8 X 2) Diesel

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump return was maintained at 146°F *(63.4°C)*. Five gears were chosen between 15% slip and 10 mph *(16.1 km/h)*. This tractor did not attain the estimated 15.95 HP-HR per gallon fuel economy at rated engine speed as claimed by the manufacturer.

We, the undersigned, certify that this is a true and correct report of official Tractor Test **1421.**

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Robert W. Kleis, Acting Dean and Director

NEBRASKA TRACTOR TEST 1422 — FORD 3610 (8 X 2) DIESEL 8 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—597 rpm)								
42.26 *(31.51)*	2000	2.704 *(10.236)*	0.441 *(0.268)*	15.63 *(3.078)*	197 *(91.7)*	54 *(12.4)*	75 *(24.0)*	29.037 *(98.052)*
Standard Power Take-off Speed (540 rpm)—One Hour								
40.17 *(29.95)*	1810	2.519 *(9.535)*	0.432 *(0.263)*	15.95 *(3.141)*	200 *(93.3)*	54 *(12.2)*	75 *(23.9)*	29.040 *(98.064)*
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
37.14 *(27.70)*	2067	2.454 *(9.289)*	0.456 *(0.277)*	15.14 *(2.982)*	188 *(86.4)*	54 *(12.2)*	75 *(23.9)*	....
0.00 *(0.00)*	2122	0.818 *(3.096)*	....	....	168 *(75.6)*	54 *(12.2)*	74 *(23.6)*	....
18.81 *(14.03)*	2094	1.570 *(5.943)*	0.576 *(0.350)*	11.98 *(2.361)*	170 *(76.4)*	54 *(12.2)*	74 *(23.3)*	....
42.48 *(31.68)*	2001	2.719 *(10.293)*	0.441 *(0.269)*	15.62 *(3.078)*	196 *(91.4)*	54 *(12.2)*	75 *(23.9)*	....
9.48 *(7.07)*	2108	1.170 *(4.429)*	0.852 *(0.518)*	8.10 *(1.596)*	168 *(75.3)*	55 *(12.8)*	75 *(23.9)*	....
28.05 *(20.92)*	2060	2.019 *(7.643)*	0.496 *(0.302)*	13.90 *(2.737)*	173 *(78.3)*	54 *(12.5)*	75 *(23.9)*	....
Av 22.66 *Av (16.90)*	2075	1.792 *(6.783)*	0.545 *(0.331)*	12.65 *(2.492)*	177 *(80.6)*	54 *(12.4)*	75 *(23.8)*	29.070 *(98.165)*

DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cool-ing med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 5th Gear											
35.86 *(26.74)*	2295 *(10.21)*	5.86 *(9.43)*	2000	5.63	2.683 *(10.155)*	0.516 *(0.314)*	13.37 *(2.633)*	191 *(88.3)*	60 *(15.6)*	70 *(20.8)*	28.815 *(97.304)*
75% of Pull at Maximum Power—Ten Hours 5th Gear											
28.85 *(21.52)*	1769 *(7.87)*	6.12 *(9.84)*	2057	4.26	2.273 *(8.604)*	0.543 *(0.330)*	12.69 *(2.501)*	181 *(82.7)*	65 *(18.1)*	75 *(23.6)*	28.675 *(96.831)*
50% of Pull at Maximum Power—Two Hours 5th Gear											
19.70 *(14.69)*	1180 *(5.25)*	6.26 *(10.08)*	2077	2.84	1.758 *(6.656)*	0.616 *(0.374)*	11.20 *(2.207)*	172 *(77.8)*	63 *(16.9)*	75 *(23.6)*	28.780 *(97.186)*
50% of Pull at Reduced Engine Speed—Two Hours 6th Gear											
19.68 *(14.68)*	1180 *(5.25)*	6.26 *(10.07)*	1662	2.78	1.559 *(5.901)*	0.546 *(0.332)*	12.63 *(2.488)*	173 *(78.3)*	64 *(17.8)*	79 *(25.8)*	28.750 *(97.084)*
MAXIMUM POWER IN SELECTED GEARS											
25.17 *(18.77)*	4964 *(22.08)*	1.90 *(3.06)*	2058	14.75	2nd Gear			173 *(78.1)*	55 *(12.8)*	60 *(15.6)*	28.820 *(97.321)*
34.69 *(25.87)*	3794 *(16.88)*	3.43 *(5.52)*	2000	9.84	3rd Gear			182 *(83.1)*	56 *(13.3)*	62 *(16.7)*	28.820 *(97.321)*
36.12 *(26.94)*	2809 *(12.50)*	4.82 *(7.76)*	2000	6.91	4th Gear			187 *(85.8)*	57 *(13.9)*	64 *(17.8)*	28.810 *(97.287)*
36.80 *(27.44)*	2358 *(10.49)*	5.85 *(9.42)*	1998	5.69	5th Gear			186 *(85.3)*	58 *(14.4)*	66 *(18.9)*	28.810 *(97.287)*
35.99 *(26.84)*	1821 *(8.10)*	7.41 *(11.93)*	2000	4.52	6th Gear			185 *(85.0)*	57 *(13.9)*	65 *(18.3)*	28.810 *(97.287)*

LUGGING ABILITY IN 5th GEAR

Crankshaft Speed rpm	1998	1807	1603	1401	1201	1007
Pull—lbs *(kN)*	2358 *(10.49)*	2455 *(10.92)*	2580 *(11.48)*	2689 *(11.96)*	2704 *(12.03)*	2676 *(11.90)*
Increase in Pull %	0	4	9	14	15	13
Power—Hp *(kW)*	36.80 *(27.44)*	34.53 *(25.75)*	32.11 *(23.94)*	29.14 *(21.73)*	25.10 *(18.72)*	20.79 *(15.51)*
Speed—Mph *(km/h)*	5.85 *(9.42)*	5.27 *(8.49)*	4.67 *(7.51)*	4.06 *(6.54)*	3.48 *(5.60)*	2.91 *(4.69)*
Slip %	5.69	5.91	6.25	6.58	6.58	6.80

Department of Agricultural Engineering

Dates of Test: April 23 to May 12, 1982

Manufacturer: FORD MOTOR COMPANY, Ford Tractor Operations, 2500 East Maple Road, Troy, Michigan 48084

FUEL, OIL AND TIME: **Fuel** No. 2 Diesel **Cetane No.** 46.5 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60°** *(15°/15°)* 0.8282 **Fuel weight** 6.896 lbs/gal *(0.826 kg/l)* **Oil SAE** 30 **API service classification** SE/SF-CC/CD **To motor** 1.472 gal *(5.572 l)* **Drained from motor** 1.378 gal *(5.217 l)* **Transmission and final drive lubricant** Ford 134 fluid **Total time engine was operated** 39.5 hours.

ENGINE: **Make** Ford Diesel **Type** three cylinder vertical **Serial No.** *C625475* **Crankshaft** lengthwise **Rated rpm** 2000 **Bore and stroke** 4.4" × 4.2" *(112 mm × 107 mm)* **Compression ratio** 16.3 to 1 **Displacement** 192 cu in *(3147 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements **Oil filter** one full flow cartridge **Oil cooler** radiator for hydraulic and rear axle oil **Fuel filter** one paper cartridge **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: **Type** standard **Serial No.** *C681121* **Tread width** rear 60" *(1525 mm)* to 76" *(1930 mm)* front 52" *(1320 mm)* to 80" *(2032 mm)* **Wheel base** 75.8" *(1925 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 31.3" *(795 mm)* Vertical distance above roadway 25.2" *(640 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph *(km/h)*** first 1.7 *(2.7)* second 2.2 *(3.5)* third 3.8 *(6.1)* fourth 5.2 *(8.4)* fifth 6.2 *(10.0)* sixth 7.8 *(12.5)* seventh 13.7 *(22.0)* eighth 18.6 *(29.9)* reverse 2.5 *(4.0)*, 9.0 *(14.5)* **Clutch** single plate dry disc operated by foot pedal **Brakes** drum and shoe operated by two foot pedals which can be locked together **Steering** power assist **Turning radius** (on concrete surface with brake applied) right 117" *(2.97 m)* left 117" *(2.97 m)* (on concrete surface without brake) right 129" *(3.28 m)* left 129" *(3.28 m)* **Turning space diameter** (on concrete surface with brake applied) right 240" *(6.1 m)* left 240" *(6.1 m)* (on concrete surface without brake) right 267" *(6.8 m)* left 267" *(6.8 m)* **Power take-off** 540 rpm at 1810 engine rpm.

REPAIRS and ADJUSTMENTS: During preliminary pto test the fuel line to number two injector and all fuel injectors were replaced.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump return was maintained at 141°F *(60.4°C)*. Five gears were chosen between 15% slip and 10 mph *(16.1 km/h)*. This tractor did not attain the estimated 15.75 HP-HR per gallon fuel economy at rated engine speed as claimed by the manufacturer.

We, the undersigned, certify that this is a true and correct report of official Tractor Test **1422**.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

TRACTOR SOUND LEVEL WITHOUT CAB	dB(A)
Maximum Available Power—Two Hours	96.5
75% of Pull at Maximum Power—Ten Hours	96.0
50% of Pull at Maximum Power—Two Hours	94.5
50% of Pull at Reduced Engine Speed—Two Hours	92.0
Bystander in 8th gear	85.5

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi *(kPa)*	Two 16.9-24; 6; 16 *(110)*	Two 16.9-24; 6; 16 *(110)*
Ballast	—Liquid (each)	692 lb *(314 kg)*	None
	—Cast Iron (each)	280 lb *(127 kg)*	None
Front Tires	—No., size, ply & psi *(kPa)*	Two 6.50-16; 6; 36 *(250)*	Two 6.50-16; 6; 36 *(250)*
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	62 lb *(28 kg)*	None
Height of Drawbar		18 in *(455 mm)*	18 in *(455 mm)*
Static Weight with Operator	—Rear	4535 lb *(2057 kg)*	2590 lb *(1175 kg)*
	—Front	1805 lb *(818 kg)*	1680 lb *(762 kg)*
	—Total	6340 lb *(2876 kg)*	4270 lb *(1937 kg)*

Ford 3610 (8 X 2) Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Robert W. Kleis, Acting Dean and Director

NEBRASKA TRACTOR TEST 1423 — FORD 3610 (8 X 4) DIESEL
8 SPEED

POWER TAKE-OFF PERFORMANCE

	Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION									
Rated Engine Speed—Two Hours (PTO Speed—600 rpm)									
	42.47 *(31.67)*	2000	2.681 *(10.149)*	0.435 *(0.265)*	15.84 *(3.121)*	195 *(90.7)*	56 *(13.3)*	75 *(23.9)*	28.830 *(97.355)*
Standard Power Take-off Speed (540 rpm)—One Hour									
	40.01 *(29.84)*	1798	2.460 *(9.312)*	0.424 *(0.258)*	16.26 *(3.204)*	197 *(91.7)*	56 *(13.3)*	75 *(23.9)*	28.825 *(97.338)*
VARYING POWER AND FUEL CONSUMPTION—Two Hours									
	37.24 *(27.77)*	2062	2.388 *(9.040)*	0.442 *(0.269)*	15.60 *(3.072)*	186 *(85.6)*	56 *(13.3)*	75 *(23.9)*	....
	0.00 *(0.00)*	2116	0.792 *(2.998)*	....	....	166 *(74.2)*	57 *(13.9)*	75 *(23.9)*	....
	18.82 *(14.03)*	2086	1.535 *(5.811)*	0.563 *(0.342)*	12.26 *(2.414)*	170 *(76.4)*	56 *(13.3)*	74 *(23.6)*	....
	42.58 *(31.75)*	2000	2.706 *(10.243)*	0.438 *(0.267)*	15.74 *(3.100)*	194 *(89.7)*	57 *(13.9)*	76 *(24.4)*	....
	9.47 *(7.06)*	2100	1.135 *(4.296)*	0.827 *(0.503)*	8.34 *(1.643)*	166 *(74.7)*	57 *(13.9)*	75 *(23.9)*	....
	28.12 *(20.97)*	2074	1.975 *(7.476)*	0.484 *(0.295)*	14.24 *(2.805)*	173 *(78.3)*	57 *(13.9)*	76 *(24.2)*	....
Av *Av*	**22.70** *(16.93)*	**2073**	**1.755** *(6.643)*	**0.533** *(0.324)*	**12.94** *(2.549)*	**176** *(79.8)*	**57** *(13.7)*	**75** *(24.0)*	**28.817** *(97.310)*

DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 5th Gear											
34.24 *(25.53)*	2229 *(9.92)*	5.76 *(9.27)*	1999	5.64	2.665 *(10.087)*	0.537 *(0.326)*	12.85 *(2.531)*	171 *(77.2)*	40 *(4.4)*	49 *(9.4)*	29.205 *(98.621)*
75% of Pull at Maximum Power—Ten Hours 5th Gear											
27.87 *(20.79)*	1729 *(7.69)*	6.05 *(9.73)*	2067	4.18	2.240 *(8.481)*	0.554 *(0.337)*	12.44 *(2.451)*	171 *(77.1)*	46 *(7.7)*	51 *(10.7)*	28.625 *(96.662)*
50% of Pull at Maximum Power—Two Hours 5th Gear											
18.90 *(14.09)*	1152 *(5.12)*	6.15 *(9.90)*	2077	3.00	1.795 *(6.795)*	0.655 *(0.398)*	10.53 *(2.075)*	168 *(75.5)*	45 *(6.9)*	55 *(12.5)*	28.340 *(95.700)*
50% of Pull at Reduced Engine Speed—Two Hours 6th Gear											
18.89 *(14.09)*	1152 *(5.12)*	6.15 *(9.90)*	1426	2.76	1.432 *(5.421)*	0.523 *(0.318)*	13.19 *(2.599)*	169 *(75.8)*	47 *(8.1)*	60 *(15.5)*	28.375 *(95.818)*
MAXIMUM POWER IN SELECTED GEARS											
28.87 *(21.53)*	4917 *(21.87)*	2.20 *(3.54)*	2057	14.79	2nd Gear			171 *(77.2)*	39 *(3.9)*	48 *(8.9)*	29.200 *(98.604)*
34.73 *(25.90)*	3952 *(17.58)*	3.30 *(5.30)*	1999	10.29	3rd Gear			173 *(78.1)*	40 *(4.4)*	49 *(9.4)*	29.200 *(98.604)*
35.19 *(26.24)*	2641 *(11.75)*	5.00 *(8.04)*	2000	6.55	4th Gear			173 *(78.1)*	40 *(4.4)*	48 *(8.9)*	29.240 *(98.739)*
35.42 *(26.41)*	2305 *(10.25)*	5.76 *(9.27)*	1999	5.64	5th Gear			172 *(77.8)*	40 *(4.4)*	49 *(9.4)*	29.200 *(98.604)*
35.57 *(26.53)*	1560 *(6.94)*	8.55 *(13.76)*	2002	3.80	6th Gear			172 *(77.8)*	39 *(3.9)*	47 *(8.3)*	29.250 *(98.773)*

Department of Agricultural Engineering

Dates of Test: March 16 to April 1, 1982

Manufacturer: FORD MOTOR COMPANY, Ford Tractor Operations, 2500 East Maple Road, Troy, Michigan 48084

FUEL, OIL AND TIME: **Fuel** No. 2 Diesel **Cetane No.** 46.5 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60°** *(15°/15°)* 0.8284 **Fuel weight** 6.897 lbs/gal *(0.826 kg/l)* **Oil SAE** 30 **API service classification** SE/SF-CC/CD **To motor** 1.484 gal *(5.617 l)* **Drained from motor** 1.421 gal *(5.379 l)* **Transmission and final drive lubricant** Ford 134 fluid **Total time engine was operated** 41.0 hours.

ENGINE: **Make** Ford Diesel **Type** three cylinder vertical **Serial No.** *C625475* **Crankshaft** lengthwise **Rated rpm** 2000 **Bore and stroke** 4.4" × 4.2" *(112 mm × 107 mm)* **Compression ratio** 16.3 to 1 **Displacement** 192 cu in *(3147 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements **Oil filter** one full flow paper cartridge **Oil cooler** radiator for hydraulic and rear axle oil **Fuel filter** one paper element **Muffler** vertical **Cooling medium temperature control** one thermostat.

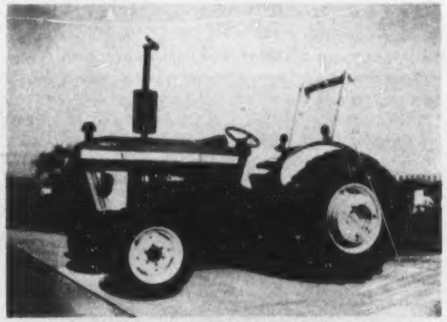
CHASSIS: **Type** standard **Serial No.** *C681344* **Tread width** rear 60" *(1525 mm)* to 76" *(1930 mm)* front 52" *(1320 mm)* to 80" *(2032 mm)* **Wheel base** 75.8" *(1925 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 31.3" *(795 mm)* Vertical distance above roadway 25,2" *(640 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph (km/h)** first 1.7 *(2.7)* second 2.5 *(4.0)* third 3.7 *(5.9)* fourth 5.4 *(8.7)* fifth 6.2 *(10.0)* sixth 9.0 *(14.4)* seventh 13.1 *(21.0)* eighth 19.4 *(31.1)* reverse 2.3 *(3.7)*, 3.3 *(5.3)*, 4.8 *(7.7)*, 7.0 *(11.3)* **Clutch** single plate dry disc operated by foot pedal **Brakes** drum and shoe operated by two foot pedals which can be locked together **Steering** power assist **Turning radius** (on concrete surface with brake applied) right 117" *(2.97 m)* left 117" *(2.97 m)* (on concrete surface without brake) right 129" *(3.28 m)* left 129" *(3.28 m)* **Turning space diameter** (on concrete surface with brake applied) right 240" *(6.1 m)* left 240" *(6.1 m)* (on concrete surface without brake) right 267" *(6.8 m)* left 267" *(6.8 m)* **Power take-off** 540 rpm at 1798 engine rpm.

LUGGING ABILITY IN 5th GEAR

Crankshaft Speed rpm	1999	1801	1604	1399	1199	1009
Pull—lbs *(kN)*	2305 *(10.25)*	2389 *(10.63)*	2528 *(11.25)*	2641 *(11.75)*	2687 *(11.95)*	2673 *(11.89)*
Increase in Pull %	0	4	10	15	17	16
Power—Hp *(kW)*	35.42 *(26.41)*	32.92 *(24.55)*	30.88 *(23.03)*	28.08 *(20.94)*	24.39 *(18.19)*	20.49 *(15.28)*
Speed—Mph *(km/h)*	5.76 *(9.27)*	5.17 *(8.32)*	4.58 *(7.37)*	3.99 *(6.42)*	3.40 *(5.48)*	2.87 *(4.63)*
Slip %	5.64	5.86	6.31	6.75	6.97	6.75

TRACTOR SOUND LEVEL WITH OUT CAB	dB(A)
Maximum Available Power—Two Hours	96.0
75% of Pull at Maximum Power—Ten Hours	95.5
50% of Pull at Maximum Power—Two Hours	94.5
50% of Pull at Reduced Engine Speed—Two Hours	92.0
Bystander in 7th gear	86.0

TIRES, BALLAST AND WEIGHT		**With Ballast**	**Without Ballast**
Rear Tires	—No., size, ply & psi *(kPa)*	Two 16.9-24; 6; 16 *(110)*	Two 16.9-24; 6; 16 *(110)*
Ballast	—Liquid (each)	685 lb *(311 kg)*	None
	—Cast iron (each)	280 lb *(127 kg)*	None
Front Tires	—No., size, ply & psi *(kPa)*	Two 6.50-16; 6; 36 *(250)*	Two 6.50-16; 6; 36 *(250)*
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	58 lb *(26 kg)*	None
Height of Drawbar		18 in *(455 mm)*	18 in *(455 mm)*
Static Weight with Operator	—Rear	4540 lb *(2059 kg)*	2610 lb *(1184 kg)*
	—Front	1800 lb *(817 kg)*	1685 lb *(764 kg)*
	—Total	6340 lb *(2876 kg)*	4295 lb *(1948 kg)*



Ford 3610 (8 X 4) Diesel

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump return was maintained at 141°F *(60.3°C)*. Five gears were chosen between 15% slip and 10 mph *(16.1 km/h)*.

We, the undersigned, certify that this is a true and correct report of official Tractor Test **1423**.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska-Lincoln
Robert W. Kleis, Acting Dean and Director

NEBRASKA TRACTOR TEST 1424 — FORD 4110 (8 X 2) DIESEL 8 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—660 rpm)								
46.33 (36.04)	2200	3.065 (11.602)	0.437 (0.266)	15.77 (3.106)	201 (93.7)	54 (12.1)	75 (24.0)	29.220 (98.672)
Standard Power Take-off Speed (540 rpm)—One Hour								
42.65 (31.80)	1799	2.605 (9.861)	0.421 (0.256)	16.37 (3.225)	204 (95.5)	54 (12.0)	75 (23.9)	29.205 (98.621)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
42.61 (31.77)	2262	2.814 (10.652)	0.456 (0.277)	15.14 (2.983)	192 (89.2)	56 (13.1)	76 (24.7)	....
0.00 (0.00)	2320	0.966 (3.657)	....	....	170 (76.9)	54 (12.2)	74 (23.6)	....
21.46 (16.00)	2298	1.823 (6.901)	0.586 (0.356)	11.77 (2.319)	173 (78.3)	54 (11.9)	74 (23.6)	....
48.78 (36.38)	2201	3.080 (11.659)	0.435 (0.265)	15.84 (3.120)	200 (93.3)	54 (12.5)	76 (24.7)	....
10.87 (8.11)	2325	1.388 (5.254)	0.881 (0.536)	7.83 (1.544)	169 (76.1)	54 (11.9)	75 (23.9)	....
32.20 (24.01)	2300	2.262 (8.563)	0.484 (0.295)	14.24 (2.804)	177 (80.6)	54 (11.9)	74 (23.6)	....
Av 25.99 Av (19.38)	2268	2.055 (7.779)	0.546 (0.332)	12.64 (2.491)	180 (82.4)	54 (12.3)	75 (24.1)	29.143 (98.413)

DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cool-ing med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 5th Gear											
40.60 (30.28)	3370 (14.99)	4.52 (7.27)	2202	7.87	3.063 (11.594)	0.520 (0.316)	13.26 (2.611)	195 (90.3)	50 (9.7)	68 (19.7)	28.945 (97.743)
75% of Pull at Maximum Power—Ten Hours 5th Gear											
33.16 (24.74)	2570 (11.43)	4.84 (7.79)	2303	5.67	2.690 (10.183)	0.559 (0.340)	12.34 (2.430)	183 (83.7)	53 (11.7)	70 (20.8)	28.733 (97.027)
50% of Pull at Maximum Power—Two Hours 5th Gear											
22.81 (17.01)	1715 (7.63)	4.99 (8.03)	2330	4.03	2.120 (8.027)	0.641 (0.390)	10.76 (2.119)	174 (78.6)	65 (18.1)	73 (22.8)	28.085 (94.839)
50% of Pull at Reduced Engine Speed—Two Hours 6th Gear											
22.81 (17.01)	1716 (7.63)	4.99 (8.03)	1864	3.86	1.849 (6.999)	0.559 (0.340)	12.34 (2.431)	178 (80.8)	63 (17.2)	78 (25.6)	27.975 (94.467)

MAXIMUM POWER IN SELECTED GEARS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Gear	Cool-ing med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
23.22 (17.31)	5681 (25.27)	1.53 (2.47)	2314	14.91	2nd Gear	173 (78.1)	63 (17.2)	67 (19.4)	28.180 (95.160)
37.47 (27.94)	5449 (24.24)	2.58 (4.15)	2200	14.13	3rd Gear	191 (88.3)	64 (17.8)	69 (20.6)	28.150 (95.058)
40.29 (30.05)	4080 (18.15)	3.70 (5.96)	2203	9.52	4th Gear	194 (89.7)	48 (8.9)	65 (18.3)	28.950 (97.760)
41.25 (30.76)	3426 (15.24)	4.51 (7.27)	2199	7.85	5th Gear	192 (88.9)	47 (8.3)	63 (17.2)	28.950 (97.860)
40.88 (30.48)	2664 (11.85)	5.75 (9.26)	2202	6.01	6th Gear	192 (88.6)	48 (8.9)	64 (17.8)	28.960 (97.794)

LUGGING ABILITY IN 5th GEAR

Crankshaft Speed rpm	2199	1982	1769	1534	1317	1099	889
Pull—lbs (kN)	3426 (15.24)	3571 (15.88)	3714 (16.52)	3794 (16.88)	3864 (17.19)	3974 (17.68)	3929 (17.48)
Increase in Pull %	0	4	8	11	13	16	15
Power—Hp (kW)	41.25 (30.76)	38.78 (28.92)	35.65 (26.58)	31.49 (23.48)	27.43 (20.46)	23.47 (17.50)	18.80 (14.02)
Speed—Mph (km/h)	4.51 (7.27)	4.07 (6.55)	3.60 (5.79)	3.11 (5.01)	2.66 (4.28)	2.21 (3.56)	1.79 (2.89)
Slip %	7.85	8.32	8.64	8.85	9.16	9.46	9.46

Department of Agricultural Engineering

Dates of Test: March 18 to April 8, 1982

Manufacturer: FORD MOTOR COMPANY, Ford Tractor Operations, 2500 East Maple Road, Troy, Michigan 48084

FUEL, OIL AND TIME: **Fuel** No. 2 Diesel **Cetane No.** 46.5 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60°** *(15°/15°)* 0.8284 **Fuel weight** 6.897 lbs/gal *(0.827 kg/l)* **Oil SAE** 30 **API service classification** SE/SF-CC/CD **To motor** 1.476 gal *(5.586 l)* **Drained from motor** 1.247 gal *(4.721 l)* **Transmission and final drive lubricant** Ford 134 fluid **Total time engine was operated** 45.5 hours.

ENGINE: **Make** Ford Diesel **Type** three cylinder vertical **Serial No.** *K629779* **Crankshaft** lengthwise **Rated rpm** 2200 **Bore and stroke** 4.4" × 4.4" *(112 mm × 112 mm)* **Compression ratio** 16.3 to 1 **Displacement** 201 cu in *(3294 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements **Oil filter** one full flow paper cartridge **Fuel filter** one paper element **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: **Type** standard **Serial No.** *C680986* **Tread width** rear 64" *(1625 mm)* to 80" *(2032 mm)* front 52" *(1320 mm)* to 80" *(2032 mm)* **Wheel base** 77.5" *(1969 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 28.8" *(732 mm)* Vertical distance above roadway 28.3" *(719 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph *(km/h)*** first 1.4 *(2.2)* second 1.7 *(2.8)* third 3.1 *(5.0)* fourth 4.2 *(6.7)* fifth 5.0 *(8.0)* sixth 6.2 *(10.0)* seventh 11.0 *(17.7)* eighth 14.9 *(24.0)* reverse 2.0 *(3.2)*, 7.2 *(11.6)* **Clutch** single plate dry disc operated by foot pedal **Brakes** wet multiple disc operated by two foot pedals which can be locked together **Steering** power assist **Turning radius** (on concrete surface with brake applied) right 114" *(2.89 m)* left 114" *(2.89 m)* (on concrete surface without brake) right 136" *(3.45 m)* left 136" *(3.45 m)* **Turning space diameter** (on concrete surface with brake applied). right 233" *(5.92 m)* left 233" *(5.92 m)* (on concrete surface without brake) right 275" *(6.98 m)* left 275" *(6.98 m)* **Power take-off** 540 rpm at 1799 engine rpm.

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump return was maintained at 150°F *(65.5°C)*. Five gears were chosen between 15% slip and 10 mph *(16.1 km/h)*.

TRACTOR SOUND LEVEL WITHOUT CAB	dB(A)
Maximum Available Power—Two Hours	97.5
75% of Pull at Maximum Power—Ten Hours	97.5
50% of Pull at Maximum Power—Two Hours	95.5
50% of Pull at Reduced Engine Speed—Two Hours	94.5
Bystander in 8th gear	88.5

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi *(kPa)*	Two 16.9-24; 6; 16 *(110)*	Two 16.9-24; 6; 16 *(110)*
Ballast	—Liquid (each)	686 lb *(311 kg)*	None
	—Cast Iron (each)	680 lb *(308 kg)*	None
Front Tires	—No., size, ply & psi *(kPa)*	Two 7.50-16; 6; 40 *(275)*	Two 7.50-16; 6; 40 *(275)*
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	60 lb *(27 kg)*	None
Height of Drawbar		15.5 in *(395 mm)*	15.5 in *(395 mm)*
Static Weight with Operator—Rear		5700 lb *(2586 kg)*	2970 lb *(1347 kg)*
—Front		1800 lb *(816 kg)*	1680 lb *(762 kg)*
—Total		7500 lb *(3402 kg)*	4650 lb *(2109 kg)*

Ford 4110 (8 X 2) Diesel

We, the undersigned, certify that this is a true and correct report of official Tractor Test 1424.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Robert W. Kleis, Acting Dean and Director

NEBRASKA TRACTOR TEST 1425 — FORD 4110 (8 X 4) DIESEL 8 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—600 rpm)								
49.26 (36.73)	2200	3.165 (11.981)	0.443 (0.270)	15.57 (3.066)	204 (95.4)	59 (14.9)	76 (24.2)	29.000 (97.929)
Standard Power Take-off Speed (540 rpm)—One Hour								
44.06 (32.86)	1799	2.744 (10.387)	0.429 (0.261)	16.06 (3.164)	205 (96.1)	59 (14.9)	75 (23.8)	28.990 (97.895)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
43.17 (32.19)	2268	2.893 (10.951)	0.462 (0.281)	14.92 (2.939)	192 (89.2)	59 (15.0)	75 (23.9)	....
0.00 (0.00)	2326	1.031 (3.903)	....	....	170 (76.9)	59 (15.0)	75 (23.9)	....
21.87 (16.31)	2300	1.901 (7.196)	0.599 (0.365)	11.51 (2.267)	175 (79.4)	59 (15.0)	75 (23.9)	....
49.83 (37.16)	2199	3.189 (12.072)	0.441 (0.268)	15.63 (3.078)	201 (93.9)	59 (15.0)	75 (23.9)	....
11.01 (8.21)	2312	1.449 (5.485)	0.907 (0.552)	7.60 (1.497)	168 (75.6)	59 (15.0)	75 (23.9)	....
32.61 (24.32)	2284	2.397 (9.074)	0.507 (0.308)	13.60 (2.680)	177 (80.6)	59 (15.0)	75 (23.9)	....
Av 26.41 Av (19.69)	2282	2.143 (8.112)	0.560 (0.340)	12.32 (2.427)	181 (82.6)	59 (15.0)	75 (23.9)	28.997 (97.917)

DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 5th Gear											
39.80 (29.68)	3023 (13.44)	4.94 (7.95)	2201	6.54	3.081 (11.663)	0.534 (0.325)	12.92 (2.544)	189 (87.2)	61 (16.1)	65 (18.3)	28.790 (97.220)
75% of Pull at Maximum Power—Ten Hours 5th Gear											
32.18 (23.99)	2318 (10.31)	5.21 (8.38)	2279	4.85	2.654 (10.045)	0.569 (0.346)	12.13 (2.389)	178 (80.9)	62 (16.8)	68 (19.7)	28.725 (97.000)
50% of Pull at Maximum Power—Two Hours 5th Gear											
21.76 (16.23)	1546 (6.87)	5.28 (8.50)	2276	3.35	2.085 (7.891)	0.661 (0.402)	10.44 (2.056)	177 (80.5)	68 (20.0)	75 (23.9)	28.760 (97.118)
50% of Pull at Reduced Engine Speed—Two Hours 6th Gear											
21.77 (16.23)	1546 (6.88)	5.28 (8.50)	1563	3.21	1.686 (6.381)	0.534 (0.325)	12.91 (2.543)	174 (78.9)	69 (20.3)	74 (23.3)	28.730 (97.017)

MAXIMUM POWER IN SELECTED GEARS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Gear	Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
29.05 (21.66)	5691 (25.31)	1.91 (3.08)	2272	14.74	2nd Gear	175 (79.2)	59 (15.0)	60 (15.6)	28.760 (97.118)
37.88 (28.24)	5188 (23.08)	2.74 (4.41)	2199	13.82	3rd Gear	190 (87.8)	64 (17.8)	69 (20.6)	28.810 (97.287)
39.65 (29.57)	3480 (15.48)	4.27 (6.88)	2202	7.76	4th Gear	191 (88.1)	65 (18.3)	70 (21.1)	28.800 (97.253)
40.59 (30.27)	3091 (13.75)	4.92 (7.92)	2200	6.79	5th Gear	195 (90.8)	65 (18.3)	71 (21.7)	28.800 (97.253)
39.97 (29.81)	2038 (9.07)	7.36 (11.84)	2200	4.22	6th Gear	193 (89.2)	66 (18.9)	73 (22.8)	28.790 (97.220)

LUGGING ABILITY IN 5th GEAR

Crankshaft Speed rpm	2200	1985	1762	1546	1323	1110	882
Pull—lbs (kN)	3091 (13.75)	3280 (14.59)	3420 (15.21)	3533 (15.72)	3641 (16.20)	3655 (16.26)	3509 (15.61)
Increase in Pull %	0	6	11	14	18	18	14
Power—Hp (kW)	40.59 (30.27)	38.85 (28.97)	35.66 (26.59)	32.18 (24.00)	28.29 (21.10)	23.79 (17.74)	18.22 (13.59)
Speed—Mph (km/h)	4.92 (7.92)	4.44 (7.15)	3.91 (6.29)	3.42 (5.50)	2.91 (4.69)	2.44 (3.93)	1.95 (3.13)
Slip %	6.79	7.11	7.54	7.86	8.29	8.29	8.08

Department of Agricultural Engineering

Dates of Test: April 23 to May 14, 1982

Manufacturer: FORD MOTOR COMPANY, Ford Tractor Operations, 2500 East Maple Road, Troy, Michigan 48084

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 46.5 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60°** *(15°/15°)* 0.8282 **Fuel weight** 6.896 lbs/gal *(0.826 kg/l)* **Oil SAE** 30 **API service classification** SE/SF-CC/CD **To motor** 1.353 gal *(5.120 l)* **Drained from motor** 1.151 gal *(4.357 l)* **Transmission and final drive lubricant** Ford 134 fluid **Total time engine was operated** 43.0 hours.

ENGINE: Make Ford Diesel **Type** three cylinder vertical **Serial No.** *K629779* **Crankshaft** lengthwise **Rated rpm** 2200 **Bore and stroke** 4.4" × 4.4" *(112 mm × 112 mm)* **Compression ratio** 16.3 to 1 **Displacement** 201 cu in *(3294 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements **Oil filter** one full flow cartridge **Fuel filter** one paper element **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: Type standard **Serial No.** *C681208* **Tread width** rear 64" *(1625 mm)* to 80" *(2032 mm)* front 52" *(1320 mm)* to 80" *(2032 mm)* **Wheel base** 77.5" *(1969 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 28.8" *(732 mm)* Vertical distance above roadway 28.3" *(719 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph *(km/h)*** first 1.4 *(2.2)* second 2.2 *(3.5)* third 3.2 *(5.1)* fourth 4.7 *(7.6)* fifth 5.4 *(8.7)* sixth 7.9 *(12.7)* seventh 11.5 *(18.5)* eighth 16.8 *(27.0)* reverse 2.0 *(3.2)*, 2.9 *(4.7)*, 4.2 *(6.7)*, 6.1 *(9.8)* **Clutch** single plate dry disc operated by foot pedal **Brakes** wet multiple disc operated by two foot pedals which can be locked together **Steering** power assist **Turning radius** (on concrete surface with brake applied) right 114" *(2.89 m)* left 114" *(2.89 m)* (on concrete surface without brake) right 136" *(3.45 m)* left 136" *(3.45 m)* **Turning space diameter** (on concrete surface with brake applied) right 233" *(5.92 m)* left 233" *(5.92 m)* (on concrete surface without brake) right 275" *(6.98 m)* left 275" *(6.98 m)* **Power take-off** 540 rpm at 1799 engine rpm.

REPAIRS and ADJUSTMENTS: The radiator fan shroud was replaced following the limber up period. All fuel injectors were replaced during preliminary PTO tests.

TRACTOR SOUND LEVEL WITHOUT CAB	dB(A)
Maximum Available Power—Two Hours	96.5
75% of Pull at Maximum Power—Ten Hours	95.0
50% of Pull at Maximum Power—Two Hours	94.0
50% of Pull at Reduced Engine Speed—Two Hours	92.0
Bystander in 8th gear	81.0

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi *(kPa)*	Two 16.9-24; 6; 16 *(110)*	Two 16.9-24; 6; 16 *(110)*
Ballast	—Liquid (each)	648 lb *(294 kg)*	None
	—Cast Iron (each)	680 lb *(308 kg)*	None
Front Tires	—No., size, ply & psi *(kPa)*	Two 7.50-16; 6; 40 *(275)*	Two 7.50-16; 6; 40 *(275)*
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	65 lb *(29 kg)*	None
Height of Drawbar		15.5 in *(395 mm)*	15.5 in *(395 mm)*
Static Weight with Operator	—Rear	5665 lb *(2570 kg)*	3010 lb *(1366 kg)*
	—Front	1835 lb *(832 kg)*	1705 lb *(773 kg)*
	—Total	7500 lb *(3402 kg)*	4715 lb *(2139 kg)*

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump return was maintained at 151°F *(66.0°C)*. Five gears were chosen between 15% slip and 10 mph *(16.1 km/h)*. The fuel tank level indicator did not function during test.

We, the undersigned, certify that this is a true and correct report of official Tractor Test **1425**.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

Ford 4110 (8 X 4) Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Robert W. Kleis, Acting Dean and Director

NEBRASKA TRACTOR TEST 1426 — FORD 4610 (8 X 2) DIESEL
ALSO FORD 4610 SU (8 X 2) DIESEL
8 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—600 rpm)								
52.52 *(39.16)*	2200	3.287 *(12.443)*	0.432 *(0.263)*	15.98 *(3.147)*	193 *(89.4)*	52 *(11.2)*	75 *(24.0)*	29.053 *(98.109)*
Standard Power Take-off Speed (540 rpm)—One Hour								
46.72 *(34.84)*	1799	2.784 *(10.539)*	0.411 *(0.250)*	16.78 *(3.306)*	193 *(89.2)*	52 *(11.2)*	75 *(23.9)*	29.015 *(97.979)*
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
45.75 *(34.12)*	2254	2.936 *(11.114)*	0.443 *(0.269)*	15.58 *(3.070)*	182 *(83.3)*	52 *(11.1)*	75 *(23.9)*	…… ……
0.00 *(0.00)*	2331	0.940 *(3.558)*	….. …..	….. …..	168 *(75.6)*	52 *(11.1)*	75 *(23.9)*	…… ……
23.32 *(17.39)*	2300	1.862 *(7.048)*	0.551 *(0.335)*	12.53 *(2.467)*	170 *(76.9)*	52 *(11.4)*	75 *(23.9)*	…… ……
53.10 *(39.60)*	2200	3.336 *(12.628)*	0.433 *(0.264)*	15.92 *(3.136)*	190 *(87.8)*	53 *(11.7)*	76 *(24.4)*	…… ……
11.75 *(8.76)*	2316	1.370 *(5.186)*	0.805 *(0.489)*	8.57 *(1.689)*	168 *(75.3)*	52 *(11.1)*	75 *(23.9)*	…… ……
34.68 *(25.86)*	2280	2.353 *(8.907)*	0.468 *(0.285)*	14.74 *(2.903)*	174 *(78.6)*	52 *(11.4)*	76 *(24.2)*	…… ……
Av 28.10 *Av (20.95)*	2280	2.133 *(8.074)*	0.524 *(0.318)*	13.17 *(2.595)*	175 *(79.4)*	52 *(11.3)*	75 *(24.1)*	28.973 *(97.839)*

DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cool-ing med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 5th Gear											
44.28 *(33.02)*	3203 *(14.25)*	5.18 *(8.34)*	2198	5.21	3.172 *(12.008)*	0.494 *(0.301)*	13.96 *(2.750)*	174 *(78.9)*	40 *(4.4)*	49 *(9.4)*	29.115 *(98.317)*
75% of Pull at Maximum Power—Ten Hours 5th Gear											
35.77 *(26.68)*	2466 *(10.97)*	5.44 *(8.75)*	2281	4.17	2.701 *(10.224)*	0.521 *(0.317)*	13.25 *(2.609)*	171 *(77.5)*	34 *(0.9)*	40 *(4.3)*	29.192 *(98.577)*
50% of Pull at Maximum Power—Two Hours 5th Gear											
24.39 *(18.19)*	1639 *(7.29)*	5.58 *(8.98)*	2308	2.89	2.103 *(7.959)*	0.595 *(0.362)*	11.60 *(2.285)*	172 *(77.5)*	39 *(3.9)*	41 *(5.0)*	28.800 *(97.253)*
50% of Pull at Reduced Engine Speed—Two Hours 6th Gear											
24.45 *(18.22)*	1642 *(7.30)*	5.58 *(8.98)*	1850	2.95	1.940 *(7.342)*	0.548 *(0.333)*	12.60 *(2.481)*	168 *(75.6)*	40 *(4.2)*	43 *(5.8)*	28.820 *(97.321)*
MAXIMUM POWER IN SELECTED GEARS											
29.19 *(21.77)*	6402 *(28.48)*	1.71 *(2.75)*	2274	13.54	2nd Gear			172 *(77.8)*	50 *(10.0)*	58 *(14.4)*	28.570 *(96.477)*
42.63 *(31.79)*	5263 *(23.41)*	3.04 *(4.89)*	2200	9.55	3rd Gear			177 *(80.5)*	50 *(10.0)*	58 *(14.4)*	28.580 *(96.510)*
43.71 *(32.59)*	3839 *(17.07)*	4.27 *(6.87)*	2201	6.00	4th Gear			178 *(81.1)*	50 *(10.0)*	59 *(15.0)*	28.590 *(96.544)*
44.51 *(33.19)*	3226 *(14.35)*	5.17 *(8.33)*	2200	5.49	5th Gear			180 *(81.9)*	50 *(10.0)*	59 *(15.0)*	28.620 *(96.645)*
43.89 *(32.73)*	2516 *(11.19)*	6.54 *(10.53)*	2198	4.10	6th Gear			177 *(80.5)*	50 *(10.0)*	59 *(15.0)*	28.600 *(96.578)*

Department of Agricultural Engineering

Dates of Test: March 16 to April 1, 1982

Manufacturer: FORD MOTOR COMPANY, Ford Tractor Operations, 2500 East Maple Road, Troy, Michigan 48084

FUEL, OIL AND TIME: **Fuel** No. 2 Diesel **Cetane No.** 46.5 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60°** *(15°/15°)* 0.8284 **Fuel weight** 6.897 lbs/gal *(0.826 kg/l)* **Oil SAE** 30 **API service classification** SE/SF-CC/CD **To motor** 1.672 gal *(6.329 l)* **Drained from motor** 1.349 gal *(5.105 l)* **Transmission and final drive lubricant** Ford 134 fluid **Total time engine was operated** 44.0 hours.

ENGINE: **Make** Ford Diesel **Type** three cylinder vertical **Serial No.** D627302 **Crankshaft** lengthwise **Rated rpm** 2200 **Bore and stroke** 4.4" × 4.4" *(112 mm × 112 mm)* **Compression ratio** 15.3 to 1 **Displacement** 201 cu in *(3294 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements **Oil filter** one full flow paper cartridge **Oil cooler** radiator for power steering oil **Fuel filter** one paper element **Muffler** vertical **Cooling medium temperature control** one thermostat.

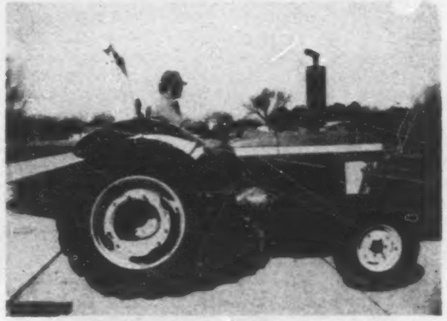
CHASSIS: **Type** standard **Serial No.** *C680987* **Tread width** rear 64" *(1625 mm)* to 80" *(2032 mm)* front 52" *(1320 mm)* to 80" *(2032 mm)* **Wheel base** 84.5" *(2146 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 28.9" *(734 mm)* Vertical distance above roadway 29.8" *(757 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph** *(km/h)* first 1.6 *(2.5)* second 2.0 *(3.1)* third 3.4 *(5.5)* fourth 4.7 *(7.5)* fifth 5.6 *(9.0)* sixth 7.0 *(11.3)* seventh 12.3 *(19.8)* eighth 16.7 *(26.9)* reverse 2.3 *(3.6)*, 8.1 *(13.0)* **Clutch** single plate dry disc operated by foot pedal **Brakes** wet multiple disc operated by two foot pedals which can be locked together **Steering** power assist **Turning radius** (on concrete surface with brake applied) right 120" *(3.05 m)* left 120" *(3.05 m)* (on concrete surface without brake) right 138" *(3.51 m)* left 138" *(3.51 m)* **Turning space diameter** (on concrete surface with brake applied) right 252" *(6.4 m)* left 252" *(6.4 m)* (on concrete surface without brake) right 291" *(7.4 m)* left 291" *(7.4 m)* **Power take-off** 540 rpm at 1799 engine rpm.

LUGGING ABILITY IN 5th GEAR

Crankshaft Speed rpm	2200	1979	1766	1547	1325	1098	911
Pull—lbs *(kN)*	3226 *(14.35)*	3529 *(15.70)*	3650 *(16.24)*	3792 *(16.87)*	3863 *(17.18)*	3906 *(17.37)*	3792 *(16.87)*
Increase in Pull %	0	9	13	18	20	21	18
Power—Hp *(kW)*	44.51 *(33.19)*	43.52 *(32.45)*	40.09 *(29.89)*	36.34 *(27.10)*	31.67 *(23.62)*	26.52 *(19.78)*	21.38 *(15.94)*
Speed—Mph *(km/h)*	5.17 *(8.33)*	4.62 *(7.44)*	4.12 *(6.63)*	3.59 *(5.78)*	3.07 *(4.95)*	2.55 *(4.10)*	2.11 *(3.40)*
Slip %	5.49	6.05	6.17	5.54	6.78	6.66	6.78

TRACTOR SOUND LEVEL WITHOUT CAB	dB(A)
Maximum Available Power—Two Hours	97.5
75% of Pull at Maximum Power—Ten Hours	96.5
50% of Pull at Maximum Power—Two Hours	95.5
50% of Pull at Reduced Engine Speed—Two Hours	94.5
Bystander in 8th gear	90.0

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi *(kPa)*	Two 16.9-30; 6; 16 *(110)*	Two 16.9-30; 6; 16 *(110)*
Ballast	—Liquid (each)	755 lb *(343 kg)*	None
	—Cast Iron (each)	640 lb *(290 kg)*	None
Front Tires	—No., size, ply & psi *(kPa)*	Two 7.50-16; 6; 44 *(305)*	Two 7.50-16; 6; 44 *(305)*
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	152 lb *(69 kg)*	None
Height of Drawbar		21 in *(535 mm)*	21 in *(535 mm)*
Static Weight with Operator	—Rear	6200 lb *(2812 kg)*	3410 lb *(1547 kg)*
	—Front	1990 lb *(903 kg)*	1685 lb *(764 kg)*
	—Total	8190 lb *(3715 kg)*	5095 lb *(2311 kg)*



Ford 4610 (8 X 2) Diesel

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump return was maintained at 141°F *(60.7°C)*. Five gears were chosen between stability limit and 10 mph *(16.1 km/h)*.

We, the undersigned, certify that this is a true and correct report of official Tractor Test **1426**.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Robert W. Kleis, Acting Dean and Director

NEBRASKA TRACTOR TEST 1427 — FORD 4610 (8 X 4) DIESEL
ALSO FORD 4610 SU (8 X 4) DIESEL
8 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—660 rpm)								
52.32 *(39.02)*	2200	3.277 *(12.405)*	0.432 *(0.263)*	15.97 *(3.146)*	194 *(89.9)*	55 *(12.8)*	75 *(23.8)*	29.240 *(98.740)*
Standard Power Take-off Speed (540 rpm)—One Hour								
47.30 *(35.27)*	1798	2.810 *(10.637)*	0.410 *(0.249)*	16.83 *(3.316)*	195 *(90.7)*	56 *(13.3)*	75 *(23.9)*	29.250 *(98.773)*
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
45.45 *(33.89)*	2249	2.941 *(11.133)*	0.446 *(0.271)*	15.45 *(3.044)*	185 *(85.0)*	56 *(13.3)*	74 *(23.6)*	....
0.00 *(0.00)*	2333	0.953 *(3.607)*	....	....	170 *(76.9)*	57 *(13.9)*	74 *(23.3)*	....
23.26 *(17.34)*	2302	1.875 *(7.098)*	0.556 *(0.338)*	12.41 *(2.443)*	172 *(77.5)*	56 *(13.6)*	74 *(23.1)*	....
52.98 *(39.51)*	2201	3.332 *(12.613)*	0.434 *(0.264)*	15.90 *(3.132)*	190 *(87.5)*	58 *(14.4)*	76 *(24.2)*	....
11.70 *(8.72)*	2316	1.396 *(5.284)*	0.823 *(0.501)*	8.38 *(1.650)*	172 *(78.1)*	58 *(14.4)*	74 *(23.6)*	....
34.49 *(25.72)*	2276	2.367 *(8.960)*	0.473 *(0.288)*	14.57 *(2.871)*	174 *(79.2)*	59 *(15.0)*	76 *(24.2)*	....
Av 27.98 Av *(20.86)*	2280	2.144 *(8.116)*	0.528 *(0.321)*	13.05 *(2.570)*	177 *(80.7)*	57 *(14.1)*	75 *(23.7)*	29.230 *(98.706)*

DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.h (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 5th Gear											
43.17 *(32.19)*	2874 *(12.78)*	5.63 *(9.07)*	2200	4.51	3.190 *(12.076)*	0.510 *(0.310)*	13.53 *(2.666)*	185 *(84.7)*	64 *(17.5)*	68 *(19.7)*	28.690 *(96.882)*
75% of Pull at Maximum Power—Ten Hours 5th Gear											
33.76 *(25.18)*	2164 *(9.63)*	5.85 *(9.42)*	2263	3.63	2.643 *(10.004)*	0.540 *(0.328)*	12.77 *(2.517)*	175 *(79.6)*	63 *(17.0)*	66 *(18.7)*	28.665 *(96.797)*
50% of Pull at Maximum Power—Two Hours 5th Gear											
23.09 *(17.22)*	1442 *(6.41)*	6.01 *(9.67)*	2292	2.30	2.066 *(7.822)*	0.617 *(0.375)*	11.18 *(2.201)*	173 *(78.3)*	65 *(18.1)*	70 *(20.8)*	28.685 *(96.865)*
50% of Pull at Reduced Engine Speed—Two Hours 6th Gear											
23.09 *(17.22)*	1443 *(6.42)*	6.00 *(9.66)*	1573	2.20	1.686 *(6.381)*	0.504 *(0.306)*	13.69 *(2.698)*	171 *(77.2)*	65 *(18.3)*	71 *(21.7)*	28.660 *(96.781)*
MAXIMUM POWER IN SELECTED GEARS											
37.16 *(27.71)*	6534 *(29.06)*	2.13 *(3.43)*	2227	13.31	2nd Gear			176 *(79.7)*	62 *(16.7)*	64 *(17.8)*	28.680 *(96.848)*
41.71 *(31.10)*	4794 *(21.32)*	3.26 *(5.25)*	2202	8.31	3rd Gear			182 *(83.1)*	62 *(16.7)*	64 *(17.8)*	28.680 *(96.848)*
42.58 *(31.75)*	3266 *(14.53)*	4.89 *(7.87)*	2199	5.40	4th Gear			182 *(83.3)*	63 *(17.2)*	65 *(18.3)*	28.680 *(96.848)*
43.26 *(32.26)*	2885 *(12.83)*	5.62 *(9.05)*	2198	4.58	5th Gear			183 *(83.9)*	63 *(17.2)*	65 *(18.3)*	28.680 *(96.848)*
42.43 *(31.64)*	1912 *(8.51)*	8.32 *(13.39)*	2200	3.16	6th Gear			181 *(82.8)*	63 *(17.2)*	65 *(18.3)*	28.680 *(96.848)*

Department of Agricultural Engineering

Dates of Test: April 24 to May 15, 1982

Manufacturer: FORD MOTOR COMPANY, Ford Tractor Operations, 2500 East Maple Road, Troy, Michigan 48084

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 46.5 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60°** *(15°/15°)* 0.8282 **Fuel weight** 6.896 lbs/gal *(0.826 kg/l)* **Oil SAE** 30 **API service classification** SE/SF-CC/CD **To motor** 1.438 gal *(5.444 l)* **Drained from motor** 1.167 gal *(4.416 l)* **Transmission and final drive lubricant** Ford 134 fluid **Total time engine was operated** 31.5 hours.

ENGINE: Make Ford Diesel **Type** three cylinder vertical **Serial No.** D627302 **Crankshaft** lengthwise **Rated rpm** 2200 **Bore and stroke** 4.4" × 4.4" *(112 mm × 112 mm)* **Compression ratio** 15.3 to 1 **Displacement** 201 cu in *(3294 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements **Oil filter** one full flow paper cartridge **Oil cooler** radiator for power steering oil **Fuel filter** one paper element **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: Type standard **Serial No.** *C681207* **Tread width** rear 64" *(1625 mm)* to 80" *(2032 mm)* front 52" *(1320 mm)* to 80" *(2032 mm)* **Wheel base** 84.5" *(2146 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 29.7" *(754 mm)* Vertical distance above roadway 29.8" *(757 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph** *(km/h)* first 1.7 *(2.7)* second 2.5 *(4.0)* third 3.6 *(5.8)* fourth 5.3 *(8.5)* fifth 6.0 *(9.7)* sixth 8.8 *(14.2)* seventh 12.9 *(20.8)* eighth 18.8 *(30.2)* reverse 2.2 *(3.6)*, 3.2 *(5.2)*, 4.7 *(7.6)*, 6.8 *(11.0)* **Clutch** single plate dry disc operated by foot pedal **Brakes** wet multiple disc operated by two foot pedals which can be locked together **Steering** power assist **Turning radius** (on concrete surface with brake applied) right 120" *(3.05 m)* left 120" *(3.05 m)* (on concrete surface without brake) right 138" *(3.51 m)* left 138" *(3.51 m)* **Turning space diameter** (on concrete surface with brake applied) right 252" *(6.4 m)* left 252" *(6.4 m)* (on concrete surface without brake) right 291" *(7.4 m)* left 291" *(7.4 m)* **Power take-off** 540 rpm at 1798 engine rpm.

LUGGING ABILITY IN 5th GEAR

Crankshaft Speed rpm	2198	1980	1760	1540	1323	1106	894
Pull—lbs *(kN)*	2885 *(12.83)*	3183 *(14.16)*	3311 *(14.73)*	3400 *(15.12)*	3479 *(15.48)*	3489 *(15.52)*	3383 *(15.05)*
Increase in Pull %	0	10	15	18	21	21	17
Power—Hp *(kW)*	43.26 *(32.26)*	42.74 *(31.87)*	39.44 *(29.41)*	35.39 *(26.39)*	31.04 *(23.15)*	26.01 *(19.40)*	20.43 *(15.23)*
Speed—Mph *(km/h)*	5.62 *(9.05)*	5.04 *(8.10)*	4.47 *(7.19)*	3.90 *(6.28)*	3.35 *(5.39)*	2.80 *(4.50)*	2.26 *(3.64)*
Slip %	4.58	5.21	5.34	5.58	5.71	5.83	5.58

TRACTOR SOUND LEVEL WITHOUT CAB	dB(A)
Maximum Available Power—Two Hours	97.0
75% of Pull at Maximum Power—Ten Hours	97.0
50% of Pull at Maximum Power—Two Hours	96.0
50% of Pull at Reduced Engine Speed—Two Hours	95.0
Bystander in 8th gear	88.5

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi *(kPa)*	Two 16.9-30; 6; 16 *(110)*	Two 16.9-30; 6; 16 *(110)*
Ballast	—Liquid (each)	745 lb *(338 kg)*	None
	—Cast Iron (each)	640 lb *(290 kg)*	None
Front Tires	—No., size, ply & psi *(kPa)*	Two 7.50-16; 6; 44 *(305)*	Two 7.50-16; 6; 44 *(305)*
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	158 lb *(71 kg)*	None
Height of Drawbar		21 in *(535 mm)*	21 in *(535 mm)*
Static Weight with Operator	—Rear	6200 lb *(2812 kg)*	3430 lb *(1556 kg)*
	—Front	2030 lb *(921 kg)*	1715 lb *(778 kg)*
	—Total	8230 lb *(3733 kg)*	5145 lb *(2334 kg)*

Ford 4610 (8 X 4) Diesel

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump return was maintained at 142°F *(60.9°C)*. Five gears were chosen between stability limit and 10 mph *(16.1 km/h)*.

We, the undersigned, certify that this is a true and correct report of official Tractor Test 1427.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Robert W. Kleis, Acting Dean and Director

NEBRASKA TRACTOR TEST 1428 — FORD 5610 (16 X 4) DIESEL 16 SPEED ALSO 8 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—596 rpm)								
62.54 (46.64)	2100	4.166 (15.770)	0.459 (0.280)	15.01 (2.958)	213 (100.4)	58 (14.3)	75 (24.0)	29.077 (98.185)
Standard Power Take-off Speed (540 rpm)—One Hour								
60.58 (45.17)	1900	3.892 (14.733)	0.443 (0.270)	15.57 (3.066)	217 (102.8)	58 (14.3)	75 (23.9)	29.120 (98.334)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
54.82 (40.88)	2106	3.610 (13.665)	0.454 (0.276)	15.18 (2.992)	200 (93.3)	58 (14.2)	76 (24.4)	....
0.00 (0.00)	2248	1.292 (4.891)	....	....	166 (74.4)	57 (13.9)	75 (23.9)	....
27.97 (20.86)	2208	2.414 (9.138)	0.595 (0.362)	11.58 (2.283)	172 (77.8)	57 (13.9)	74 (23.6)	....
63.55 (47.39)	2101	4.206 (15.921)	0.457 (0.278)	15.11 (2.977)	207 (97.2)	58 (14.2)	75 (23.9)	....
14.13 (10.54)	2232	1.814 (6.867)	0.885 (0.539)	7.79 (1.535)	172 (78.1)	57 (13.9)	75 (23.9)	....
41.50 (30.95)	2186	2.984 (11.295)	0.496 (0.302)	13.91 (2.740)	179 (81.7)	57 (13.9)	75 (23.9)	....
Av 33.66 (25.10)	2190	2.720 (10.296)	0.557 (0.339)	12.38 (2.438)	183 (83.8)	57 (14.0)	75 (23.9)	29.190 (98.570)

DRAWBAR PERFORMANCE (Front Wheel Drive Disengaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 10th (6L) Gear											
53.43 (39.84)	3512 (15.62)	5.70 (9.18)	2105	5.03	4.168 (15.779)	0.538 (0.327)	12.82 (2.525)	216 (102.2)	60 (15.6)	82 (27.8)	28.635 (96.696)
75% of Pull at Maximum Power—Ten Hours 10th (6L) Gear											
43.26 (32.26)	2702 (12.02)	6.00 (9.66)	2131	3.75	3.476 (13.159)	0.554 (0.337)	12.44 (2.451)	188 (86.8)	63 (17.2)	72 (22.4)	28.467 (96.129)
50% of Pull at Maximum Power—Two Hours 10th (6L) Gear											
29.48 (21.98)	1805 (8.02)	6.13 (9.87)	2205	2.67	2.864 (10.840)	0.670 (0.407)	10.30 (2.028)	169 (76.1)	51 (10.3)	60 (15.3)	28.780 (97.186)
50% of Pull at Reduced Engine Speed—Two Hours 13th (7L) Gear											
29.45 (21.96)	1802 (8.01)	6.13 (9.86)	1255	2.60	2.320 (8.782)	0.545 (0.331)	12.69 (2.500)	190 (87.5)	57 (13.6)	70 (21.1)	28.735 (97.034)
MAXIMUM POWER IN SELECTED GEARS											
49.71 (37.07)	7408 (32.95)	2.52 (4.05)	2106	14.76	5th (3L) Gear			196 (90.8)	56 (13.3)	71 (21.7)	28.830 (97.355)
51.91 (38.71)	5631 (25.05)	3.46 (5.56)	2101	8.84	6th (3H) Gear			201 (93.6)	56 (13.3)	72 (22.2)	28.830 (97.355)
53.56 (39.94)	5469 (24.33)	3.67 (5.91)	2100	8.51	7th (4L) Gear			202 (94.4)	57 (13.9)	73 (22.8)	28.840 (97.388)
54.23 (40.44)	4543 (20.21)	4.48 (7.20)	2101	6.91	8th (5L) Gear			198 (91.9)	55 (12.8)	70 (21.1)	28.870 (97.490)
53.15 (39.64)	4112 (18.29)	4.85 (7.80)	2102	6.08	9th (4H) Gear			200 (93.3)	55 (12.8)	70 (21.1)	28.880 (97.523)
54.63 (40.74)	3603 (16.03)	5.69 (9.15)	2100	5.24	10th (6L) Gear			200 (93.3)	55 (12.8)	70 (21.1)	28.860 (97.456)
53.81 (40.13)	3433 (15.27)	5.88 (9.46)	2100	4.82	11th (5H) Gear			200 (93.1)	55 (12.8)	70 (21.1)	28.840 (97.388)
53.60 (39.97)	2704 (12.03)	7.43 (11.96)	2102	3.59	12th (6H) Gear			200 (93.1)	56 (13.3)	72 (22.2)	28.840 (97.388)

Department of Agricultural Engineering

Dates of Test: March 25 to April 19, 1982

Manufacturer: FORD MOTOR COMPANY, Ford Tractor Operations, 2500 East Maple Road, Troy, Michigan 48084

FUEL, OIL AND TIME: **Fuel** No. 2 Diesel **Cetane No.** 46.5 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60°** *(15°/15°)* 0.8283 **Fuel weight** 6.897 lbs/gal *(0.827 kg/l)* **Oil SAE** 30 **API service classification** SE/SF-CC/CD **To motor** 1.745 gal *(6.606 l)* **Drained from motor** 1.436 gal *(5.436 l)* **Transmission and hydraulic lubricant** Ford 134 fluid **Front axle lubricant** Ford EOAZ-19580 fluid **Total time engine was operated** 47.5 hours.

ENGINE: **Make** Ford Diesel **Type** four cylinder vertical **Serial No.** *L627031* **Crankshaft** lengthwise **Rated rpm** 2100 **Bore and stroke** 4.4" × 4.2" *(112 mm × 107 mm)* **Compression ratio** 16.3 to 1 **Displacement** 256 cu in *(4195 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements with centrifugal precleaner **Oil filter** one full flow paper cartridge **Oil cooler** radiator for hydraulic and transmission oil, radiator for power steering fluid **Fuel filter** one paper element **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: **Type** front wheel assist **Serial No.** *C681210* **Tread width** rear 60" *(1525 mm)* to 90" *(2286 mm)* front 60" *(1525 mm)* to 80" *(2032 mm)* **Wheel base** 88.8" *(2255 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 31.7" *(804 mm)* Vertical distance above roadway 32.9" *(837 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** [illegible] engine drive **Transmission** selective gear fixed ratio with partial (2) range operator controlled powershift **Advertised speeds mph** *(km/h)* first 1.3 *(2.2)* second 1.7 *(2.7)* third 1.7 *(2.8)* fourth 2.2 *(3.5)* fifth 2.9 *(4.7)* sixth 3.8 *(6.1)* seventh 4.0 *(6.5)* eighth 4.8 *(7.8)* ninth 5.2 *(8.4)* tenth 6.0 *(9.7)* eleventh 6.2 *(10.0)* twelfth 7.8 *(12.5)* thirteenth 10.6 *(17.0)* fourteenth 13.6 *(21.8)* fifteenth 14.5 *(23.4)* sixteenth 18.6 *(30.0)* reverse 1.9 *(3.1)*, 2.5 *(4.0)*, 7.0 *(11.2)*, 8.9 *(14.4)* **Clutch** single plate dry disc operated by foot pedal **Brakes** wet multiple disc operated by two foot pedals which can be locked together **Steering** power assist **Turning radius** (on concrete surface with brake applied) right 194" *(4.93 m)* left 194" *(4.93 m)* (on concrete surface without brake) right 209" *(5.30 m)* left 209" *(5.30 m)* **Turning space diameter** (on concrete surface with brake applied) right 395" *(10.03 m)* left 395" *(10.03 m)* (on concrete surface without brake) right 425" *(10.79 m)* left 425" *(10.79 m)* **Power take-off** 540 rpm at 1900 engine rpm.

LUGGING ABILITY IN 10th (6L) GEAR

Crankshaft Speed rpm	2100	1890	1685	1468	1271	1063
Pull—lbs (kN)	3603 (16.03)	3864 (17.19)	4064 (18.08)	4127 (18.36)	4154 (18.48)	4083 (18.16)
Increase in Pull %	0	7	13	15	15	13
Power—Hp (kW)	54.63 (40.74)	52.47 (39.13)	49.03 (36.56)	43.33 (32.31)	37.73 (28.14)	31.03 (23.14)
Speed—Mph (km/h)	5.69 (9.15)	5.09 (8.19)	4.52 (7.28)	3.94 (6.34)	3.41 (5.48)	2.85 (4.59)
Slip %	5.24	5.59	6.01	6.01	6.15	6.15

TRACTOR SOUND LEVEL WITHOUT CAB	dB(A)	Front Wheel Drive Disengaged dB(A)
Maximum Available Power—Two Hours	97.0	96.0
75% of Pull at Maximum Power—Ten Hours		90.0
50% of Pull at Maximum Power—Two Hours		95.5
50% of Pull at Reduced Engine Speed—Two Hours		91.0
Bystander in 16th (8H) gear		89.0

DRAWBAR PERFORMANCE (Front Wheel Drive Engaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 10th (6L) Gear											
53.27 (39.73)	3455 (15.37)	5.78 (9.31)	2099	4.27	4.061 (15.373)	0.533 (0.324)	13.12 (2.584)	218 (103.3)	61 (16.1)	84 (28.9)	28.570 (96.477)
MAXIMUM POWER IN SELECTED GEARS											
41.02 (30.59)	8090 (35.99)	1.90 (3.06)	2162	14.96	4th (2H) Gear			185 (85.0)	56 (13.3)	70 (21.1)	28.830 (97.355)
55.18 (41.15)	4546 (20.22)	4.55 (7.33)	2100	5.98	8th (5L) Gear			202 (94.4)	55 (12.8)	70 (21.1)	28.900 (97.591)
54.93 (40.96)	3567 (15.86)	5.78 (9.30)	2100	4.34	10th (6L) Gear			201 (93.9)	55 (12.8)	70 (21.1)	28.840 (97.388)

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi *(kPa)*	Two 18.4-34; 6; 16 *(110)*	Two 18.4-34; 6; 16 *(110)*
Ballast	—Liquid (each)	768 lb *(348 kg)*	None
	—Cast Iron (each)	350 lb *(159 kg)*	None
Front Tires	—No., size, ply & psi *(kPa)*	Two 13.6-24; 8; 22 *(150)*	Two 13.6-24; 8; 22 *(150)*
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	45 lb *(20 kg)*	None
Height of Drawbar		20.5 in *(520 mm)*	20.5 in *(520 mm)*
Static Weight with Operator—Rear		6980 lb *(3166 kg)*	4745 lb *(2152 kg)*
—Front		2720 lb *(1234 kg)*	2630 lb *(1193 kg)*
—Total		9700 lb *(4400 kg)*	7375 lb *(3345 kg)*

Ford 5610 (16 X 4) Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Robert W. Kleis, Acting Dean and Director

REPAIRS and ADJUSTMENTS: All fuel injectors were replaced during preliminary PTO tests.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump return was maintained at 152°F *(66.6°C)*. Eight gears were chosen between 15% slip and 10 mph *(16.1 km/h)*. This tractor did not attain the estimated 15.37 HP-HR per gallon fuel economy at rated engine speedas claimed by the manufacturer.

We, the undersigned, certify that this is a true and correct report of official Tractor Test 1428.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

NEBRASKA TRACTOR TEST 1429 — FORD 5610 (16 X 8) DIESEL
16 SPEED ALSO 8 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—596 rpm)								
62.57	2100	4.174	0.460	14.99	197	57	75	29.325
(46.66)		*(15.800)*	*(0.280)*	*(2.[illegible])*	*(91.7)*	*(13.9)*	*(24.1)*	*(99.026)*
Standard Power Take-off Speed (540 rpm)—One Hour								
59.99	1901	3.884	0.447	15.45	198	54	74	29.270
(44.73)		*(14.703)*	*(0.272)*	*(3.042)*	*(92.1)*	*(12.4)*	*(23.6)*	*(98.840)*
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
54.90	2156	3.680	0.462	14.92	186	53	75	......
(40.94)		*(13.930)*	*(0.281)*	*(2.939)*	*(85.3)*	*(11.7)*	*(23.9)*	......
0.00	2225	1.308	.....	.....	167	54	76	......
(0.00)		*(4.955)*	.....	.....	*(75.0)*	*(12.2)*	*(24.4)*	......
27.79	2194	2.466	0.612	11.27	168	53	74	......
(20.72)		*(9.333)*	*(0.372)*	*(2.220)*	*(75.6)*	*(11.7)*	*(23.6)*	......
62.51	2101	4.202	0.464	14.88	189	54	76	......
(46.61)		*(15.906)*	*(0.282)*	*(2.930)*	*(87.2)*	*(11.9)*	*(24.2)*	......
13.98	2208	1.883	0.929	7.42	168	53	74	......
(10.42)		*(7.128)*	*(0.565)*	*(1.462)*	*(75.8)*	*(11.7)*	*(23.3)*	......
41.41	2178	3.023	0.503	13.70	170	53	75	......
[illegible]		*(11.443)*	*(0.306)*	*(2.699)*	*(76.7)*	*(11.7)*	*(23.9)*	......
Av 33.43	2179	2.761	0.570	12.11	175	53	75	29.247
Av (24.93)		*(10.452)*	*(0.346)*	*(2.385)*	*(79.3)*	*(11.8)*	*(23.9)*	*(98.762)*

DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 11th (6L) Gear											
52.98	3029	6.56	2097	4.07	4.096	0.533	12.93	178	53	61	29.170
(39.51)	*(13.47)*	*(10.56)*			*(15.505)*	*(0.324)*	*(2.548)*	*(81.1)*	*(11.7)*	*(16.1)*	*(98.503)*
75% of Pull at Maximum Power—Ten Hours 11th (6L) Gear											
42.16	2297	6.88	2174	2.89	3.505	0.573	12.03	177	65	73	28.880
(31.44)	*(10.22)*	*(11.08)*			*(13.268)*	*(0.349)*	*(2.370)*	*(80.6)*	*(18.3)*	*(22.7)*	*(97.523)*
50% of Pull at Maximum Power—Two Hours 11th (6L) Gear											
28.70	1533	7.02	2195	1.94	2.845	0.684	10.09	170	66	74	28.715
(21.40)	*(6.82)*	*(11.30)*			*(10.771)*	*(0.416)*	*(1.987)*	*(76.7)*	*(18.6)*	*(23.1)*	*(96.966)*
50% of Pull at Reduced Engine Speed—Two Hours 13th (7L) Gear											
28.73	1533	7.03	1500	1.79	2.338	0.561	12.29	178	68	79	28.720
(21.42)	*(6.82)*	*(11.31)*			*(8.850)*	*(0.341)*	*(2.420)*	*(80.8)*	*(20.0)*	*(26.1)*	*(96.983)*
MAXIMUM POWER IN SELECTED GEARS											
44.37	7578	2.20	2133	13.35	4th (2H) Gear			177	62	67	28.710
(33.09)	*(33.71)*	*(3.53)*						*(80.6)*	*(16.7)*	*(19.4)*	*(96.949)*
48.69	7411	2.46	2098	13.06	5th (3L) Gear			185	64	70	28.700
(36.31)	*(32.96)*	*(3.97)*						*(84.7)*	*(17.8)*	*(21.1)*	*(96.916)*
50.23	5041	3.34	2099	8.39	6th (3H) Gear			184	55	65	29.120
(37.46)	*(25.09)*	*(5.37)*						*(84.2)*	*(12.8)*	*(18.3)*	*(98.334)*
51.88	5081	3.83	2101	7.20	7th (4L) Gear			181	55	65	29.120
(38.69)	*(22.60)*	*(6.16)*						*(82.5)*	*(12.8)*	*(18.3)*	*(98.334)*
53.02	4500	4.42	2101	6.18	8th (5L) Gear			181	55	65	29.120
(39.54)	*(20.01)*	*(7.11)*						*(82.8)*	*(12.8)*	*(18.3)*	*(98.334)*
50.97	3796	5.04	2099	5.07	9th (4H) Gear			180	55	65	29.150
(38.01)	*(16.88)*	*(8.10)*						*(81.9)*	*(12.8)*	*(18.3)*	*(98.368)*
52.19	3376	5.80	2103	4.36	10th (5H) Gear			181	55	65	29.130
(38.92)	*(15.01)*	*(9.33)*						*(82.8)*	*(12.8)*	*(18.3)*	*(98.368)*
53.70	3063	6.57	2100	4.00	11th (6L) Gear			182	54	64	29.140
(40.05)	*(13.62)*	*(10.58)*						*(83.3)*	*(12.2)*	*(17.8)*	*(98.401)*
51.05	2236	8.56	2101	2.76	12th (6H) Gear			180	53	65	29.130
(38.07)	*(9.94)*	*(13.78)*						*(82.2)*	*(11.7)*	*(18.3)*	*(98.368)*

Department of Agricultural Engineering

Dates of Test: April 5 to May 6, 1982

Manufacturer: FORD MOTOR COMPANY, Ford Tractor Operations, 2500 East Maple Road, Troy, Michigan 48084

FUEL, OIL AND TIME: **Fuel** No. 2 Diesel **Cetane No.** 46.5 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60°** *(15°/15°)* 0.8283 **Fuel weight** 6.897 lbs/gal *(0.827 kg/l)* **Oil SAE** 30 **API service classification** SE/SF-CC/CD **To motor** 1.790 gal *(6.778 l)* **Drained from motor** 1.525 gal *(5.772 l)* **Transmission and hydraulic lubricant** Ford 134 fluid **Total time engine was operated** 52.5 hours.

ENGINE: **Make** Ford Diesel **Type** four cylinder vertical **Serial No.** *L634940* **Crankshaft** lengthwise **Rated rpm** 2100 **Bore and stroke** 4.4" × 4.2" *(112 mm × 107 mm)* **Compression ratio** 16.3 to 1 **Displacement** 256 cu in *(4195 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements with centrifugal precleaner **Oil filter** one full flow paper cartridge **Oil cooler** radiator for transmission and hydraulic oil, radiator for power steering fluid **Fuel filter** one paper element **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: **Type** standard **Serial No.** C680988 **Tread width** rear 60" *(1525 mm)* to 80" *(2032 mm)* front 52" *(1320 mm)* to 80" *(2032 mm)* **Wheel base** 87.5" *(2223 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from centerline of rear wheels 29.3" *(744 mm)* Vertical distance above roadway 32.9" *(837 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (2) range operator controlled powershift **Advertised speeds mph *(km/h)*** first 1.3 *(2.2)* second 1.7 *(2.8)* third 2.0 *(3.1)* fourth 2.5 *(4.0)* fifth 2.9 *(4.6)* sixth 3.7 *(5.9)* seventh 4.2 *(6.7)* eighth 4.8 *(7.7)* ninth 5.4 *(8.7)* tenth 6.1 *(9.9)* eleventh 6.9 *(11.2)* twelfth 8.9 *(14.4)* thirteenth 10.2 *(16.3)* fourteenth 13.1 *(21.0)* fifteenth 14.8 *(23.7)* sixteenth 19.0 *(30.6)* reverse 1.7 *(2.8)*, 2.2 *(3.6)*, 2.5 *(4.1)*, 3.3 *(5.3)*, 3.7 *(6.0)*, 4.8 *(7.7)*, 5.4 *(8.7)*, 6.9 *(11.2)* **Clutch** single plate dry disc operated by foot pedal **Brakes** wet multiple disc operated by two foot pedals which can be locked together **Steering** power assist **Turning radius** (on concrete surface with brake applied) right 120" *(3.05 m)* left 120" *(3.05 m)* (on concrete surface without brake) right 138" *(3.51 m)* left 138" *(3.51 m)* **Turning space diameter** (on concrete surface with brake applied) right 249" *(6.32 m)* left 249" *(6.32 m)* (on concrete surface without brake) right 294" *(7.47 m)* left 294" *(7.47 m)* **Power take-off** 540 rpm at 1901 engine rpm.

LUGGING ABILITY IN 11th (6L) GEAR

Crankshaft Speed rpm	2100	1893	1683	1479	1263	1061
Pull—lbs	3063	3256	3419	3516	3551	3469
(kN)	*(13.62)*	*(14.48)*	*(15.21)*	*(15.64)*	*(15.71)*	*(15.43)*
Increase in Pull %	0	6	12	15	15	13
Power—Hp	53.70	51.31	47.81	43.08	36.94	30.54
(kW)	*(40.05)*	*(38.26)*	*(35.65)*	*(32.12)*	*(27.54)*	*(22.77)*
Speed—Mph	6.57	5.91	5.24	4.59	3.92	3.30
(km/h)	*(10.58)*	*(9.51)*	*(8.44)*	*(7.39)*	*(6.31)*	*(5.31)*
Slip %	4.00	4.29	4.57	4.71	4.71	4.57

TRACTOR SOUND LEVEL WITHOUT CAB	dB(A)
Maximum Available Power—Two Hours	96.5
75% of Pull at Maximum Power—Ten Hours	95.5
50% of Pull at Maximum Power—Two Hours	94.5
50% of Pull at Reduced Engine Speed—Two Hours	92.0
Bystander in 15th (8L) gear	89.5

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi *(kPa)*	Two 18.4-34; 6; 16 *(110)*	Two 18.4-34; 6; 16 *(110)*
Ballast	—Liquid (each)	1112 lb *(505 kg)*	None
	—Cast Iron (each)	400 lb *(181 kg)*	None
Front Tires	—No., size, ply & psi *(kPa)*	Two 7.50-18; 6; 40 *(275)*	Two 7.50-18; 6; 40 *(275)*
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	52 lb *(24 kg)*	None
Height of Drawbar		20.5 in *(520 mm)*	20.5 in *(520 mm)*
Static Weight with Operator—Rear		7325 lb *(3323 kg)*	4300 lb *(1951 kg)*
—Front		2220 lb *(1007 kg)*	2115 lb *(959 kg)*
—Total		9545 lb *(4330 kg)*	6415 lb *(2910 kg)*

REPAIRS AND ADJUSTMENTS: The fuel injection pump was replaced during preliminary PTO tests.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump return was maintained at 148°F *(64.4°C)*. Nine gears were chosen between stability limit and 10 mph *(16.1 km/h)*. This tractor did not attain the estimated 15.37 HP-HR per gallon fuel economy at rated engine speed as claimed by the manufacturer.

We, the undersigned, certify that this is a true and correct report of official Tractor Test **1429**.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

Ford 5610 (16 X 8) Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Robert W. Kleis, Acting Dean and Director

NEBRASKA TRACTOR TEST 1430 — FORD 6610 (16 X 4) DIESEL. ALSO FORD 6710 (16 X 4) DIESEL 16 SPEED ALSO 8 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—596 rpm)								
72.13 (53.79)	2100	4.692 (17.761)	0.449 (0.273)	15.37 (3.029)	195 (90.8)	55 (12.9)	75 (23.9)	28.845 (97.400)
Standard Power Take-off Speed (540 rpm)—One Hour								
68.27 (50.91)	1901	4.366 (16.527)	0.441 (0.268)	15.64 (3.080)	197 (91.9)	54 (12.4)	75 (23.9)	28.860 (97.456)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
63.35 (47.24)	2170	4.071 (15.410)	0.445 (0.270)	15.56 (3.066)	183 (83.9)	54 (12.3)	74 (23.6)	....
0.00 (0.00)	2252	1.240 (4.694)	....	....	166 (74.7)	54 (12.2)	74 (23.3)	....
32.38 (24.15)	2218	2.545 (9.634)	0.542 (0.330)	12.73 (2.507)	170 (76.9)	54 (12.2)	74 (23.3)	....
72.46 (54.03)	2102	4.732 (17.913)	0.450 (0.274)	15.31 (3.016)	189 (87.2)	54 (12.2)	74 (23.6)	....
16.35 (12.19)	2240	1.862 (7.048)	0.786 (0.478)	8.78 (1.730)	168 (75.8)	54 (12.2)	75 (23.9)	....
48.17 (35.92)	2190	3.262 (12.348)	0.467 (0.284)	14.77 (2.909)	173 (78.3)	54 (12.5)	75 (23.9)	....
Av 38.78 *Av* (28.92)	2197	2.952 (11.175)	0.525 (0.319)	13.14 (2.588)	175 (79.3)	54 (12.3)	75 (23.6)	28.903 (97.880)

DRAWBAR PERFORMANCE (Front Wheel Drive Disengaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 10th (6L) Gear											
60.96 (45.46)	4066 (18.08)	5.62 (9.05)	2100	6.22	4.549 (17.220)	0.515 (0.313)	13.40 (2.640)	176 (79.7)	47 (8.3)	61 (15.8)	29.110 (98.300)
75% of Pull at Maximum Power—Ten Hours 10th (6L) Gear											
48.72 (36.33)	3063 (13.63)	5.96 (9.60)	2188	4.52	3.778 (14.300)	0.535 (0.325)	12.90 (2.541)	171 (76.9)	46 (7.8)	54 (12.2)	28.838 (97.383)
50% of Pull at Maximum Power—Two Hours 10th (6L) Gear											
32.78 (24.45)	2001 (8.90)	6.14 (9.89)	2228	3.44	3.045 (11.526)	0.641 (0.390)	10.77 (2.121)	169 (76.1)	47 (8.1)	48 (8.9)	28.685 (96.865)
50% of Pull at Reduced Engine Speed—Two Hours 13th (7L) Gear											
32.66 (24.36)	2000 (8.90)	6.12 (9.86)	1266	3.44	2.682 (10.154)	0.566 (0.345)	12.18 (2.399)	170 (76.4)	45 (6.9)	47 (8.1)	28.735 (97.034)

MAXIMUM POWER IN SELECTED GEARS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Gear	Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
54.34 (40.52)	7887 (35.08)	2.58 (4.16)	2161	14.61	5th (3L) Gear	171 (77.2)	35 (1.7)	40 (4.4)	29.170 (98.503)
57.59 (42.94)	6388 (28.42)	3.38 (5.44)	2100	10.66	6th (3H) Gear	177 (80.6)	47 (8.3)	59 (15.0)	29.140 (98.401)
59.84 (44.63)	6242 (27.76)	3.60 (5.79)	2097	10.15	7th (4L) Gear	176 (80.0)	47 (8.3)	59 (15.0)	29.140 (98.401)
61.06 (45.53)	5189 (23.08)	4.41 (7.10)	2097	7.94	8th (5L) Gear	177 (80.3)	47 (8.3)	58 (14.4)	29.160 (98.469)
59.37 (44.27)	4653 (20.70)	4.79 (7.70)	2098	7.00	9th (4H) Gear	177 (80.3)	47 (8.3)	57 (13.9)	29.170 (98.503)
61.17 (45.62)	4084 (18.16)	5.62 (9.04)	2098	6.04	10th (6L) Gear	177 (80.3)	47 (8.3)	61 (16.1)	29.100 (98.266)
60.49 (45.11)	3901 (17.35)	5.82 (9.36)	2100	5.84	11th (5H) Gear	175 (79.4)	46 (7.8)	56 (13.3)	29.190 (98.570)
59.72 (44.53)	3048 (13.56)	7.35 (11.83)	2096	4.49	12th (6H) Gear	175 (79.4)	47 (8.3)	57 (13.9)	29.180 (98.536)

Department of Agricultural Engineering

Dates of Test: April 1 to April 21, 1982

Manufacturer: FORD MOTOR COMPANY, Ford Tractor Operations, 2500 East Maple Road, Troy, Michigan 48084

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 46.5 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60°** *(15°/15°)* 0.8283 **Fuel weight** 6.897 lbs/gal *(0.827 kg/l)* **Oil SAE** 30 **API service classification** SE/SF-CC/CD **To motor** 1.910 gal *(7.232 l)* **Drained from motor** 1.632 gal *(6.179 l)* **Transmission and final drive lubricant** Ford 134 fluid **Front axle lubricant** Ford EOAZ-19580 fluid **Total time engine was operated** 52.5 hours.

ENGINE: Make Ford Diesel **Type** four cylinder vertical **Serial No.** *E635576* **Crankshaft** lengthwise **Rated rpm** 2100 **Bore and stroke** 4.4" × 4.4" *(112 mm × 112 mm)* **Compression ratio** 16.3 to 1 **Displacement** 268 cu in *(4392 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements **Oil filter** one full flow paper cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil, radiator for power steering fluid **Fuel filter** one paper element **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: Type front wheel assist **Serial No.** *C681211* **Tread width** rear 60" *(1525 mm)* to 90" *(2285 mm)* front 60" *(1525 mm)* to 80" *(2032 mm)* **Wheel base** 88.8" *(2256 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 31.6" *(803 mm)* Vertical distance above roadway 32.9" *(837 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (2) range operator controlled powershift **Advertised speeds mph *(km/h)*** first 1.3 *(2.2)* second 1.7 *(2.7)* third 1.7 *(2.8)* fourth 2.2 *(3.5)* fifth 2.9 *(4.7)* sixth 3.8 *(6.1)* seventh 4.0 *(6.5)* eighth 4.8 *(7.8)* ninth 5.2 *(8.4)* tenth 6.0 *(9.7)* eleventh 6.2 *(10.0)* twelfth 7.8 *(12.5)* thirteenth 10.6 *(17.0)* fourteenth 13.6 *(21.8)* fifteenth 14.5 *(23.4)* sixteenth 18.6 *(30.0)* reverse 1.9 *(3.1)*, 2.5 *(4.0)*, 7.0 *(11.2)*, 8.9 *(14.4)* **Clutch** single plate dry disc operated by foot pedal **Brakes** wet multiple disc operated by two foot pedals which can be locked together **Steering** power assist **Turning radius** (on concrete surface with brake applied) right 194" *(4.93 m)* left 194" *(4.93 m)* (on concrete surface without brake) right 209" *(5.30 m)* left 209" *(5.30 m)* **Turning space diameter** (on concrete surface with brake applied) right 395" *(10.03 m)* left 395" *(10.03 m)* (on concrete surface without brake) right 425" *(10.79 m)* left 425" *(10.79 m)* **Power take-off** 540 rpm at 1901 engine rpm.

LUGGING ABILITY IN 10th (6L) GEAR

Crankshaft Speed rpm	2098	1891	1676	1475	1274	1050
Pull—lbs *(kN)*	4084 (18.16)	4332 (19.27)	4507 (20.05)	4575 (20.35)	4542 (20.20)	4298 (19.12)
Increase in Pull %	0	6	10	12	11	5
Power—Hp *(kW)*	61.17 (45.62)	58.31 (43.48)	53.62 (39.99)	47.81 (35.65)	40.99 (30.56)	32.08 (23.92)
Speed—Mph *(km/h)*	5.62 (9.04)	5.05 (8.12)	4.46 (7.18)	3.92 (6.31)	3.38 (5.45)	2.80 (4.50)
Slip %	6.04	6.46	6.50	6.73	6.87	6.59

TRACTOR SOUND LEVEL WITHOUT CAB	dB(A)	Front Wheel Drive Disengaged dB(A)
Maximum Available Power—Two Hours	97.0	96.5
75% of Pull at Maximum Power—Ten Hours		96.5
50% of Pull at Maximum Power—Two Hours		96.5
50% of Pull at Reduced Engine Speed—Two Hours		93.0
Bystander in 16th (8H) gear		88.5

DRAWBAR PERFORMANCE (Front Wheel Drive Engaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 10th (6L) Gear											
60.88 (45.40)	3986 (17.73)	5.73 (9.22)	2100	5.06	4.477 (16.946)	0.507 (0.308)	13.60 (2.679)	175 (79.2)	47 (8.1)	62 (16.4)	29.075 (98.182)

MAXIMUM POWER IN SELECTED GEARS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Gear	Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
44.47 (33.16)	8708 (38.73)	1.91 (3.08)	2178	14.92	4th (2H) Gear	165 (73.8)	36 (2.2)	42 (5.6)	29.170 (98.503)
62.15 (46.35)	5176 (23.02)	4.50 (7.25)	2101	6.98	8th (5L) Gear	174 (78.9)	47 (8.3)	58 (14.4)	29.150 (98.435)
61.43 (45.81)	4024 (17.90)	5.72 (9.21)	2101	5.24	10th (6L) Gear	174 (78.9)	45 (7.2)	55 (12.8)	29.200 (98.604)

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi *(kPa)*	Two 18.4-34; 6; 16 *(110)*	Two 18.4-34; 6; 16 *(110)*
Ballast	—Liquid ([illegible])	730 lb *(331 kg)*	None
	—Cast Ir[illegible]ch)	340 lb *(154 kg)*	None
Front Tires	—No., size, [illegible] & psi *(kPa)*	Two 13.6-24; 8; 22 *(150)*	Two 13.6-24; 8; 22 *(150)*
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	65 lb *(29 kg)*	None
Height of Drawbar		20 in *(510 mm)*	20 in *(510 mm)*
Static Weight with Operator—Rear		6925 lb *(3141 kg)*	4785 lb *(2170 kg)*
—Front		2775 lb *(1259 kg)*	2645 lb *(1200 kg)*
—Total		9700 lb *(4400 kg)*	7430 lb *(3370 kg)*

REPAIRS and ADJUSTMENTS: The timing cover gasket was replaced during preliminary PTO tests.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump was maintained at 160°F *(71.1°C)*. Eight gears were chosen between 15% slip and 10 mph *(16.1 km/h)*. This tractor did not attain the estimated 15.54 HP-HR per gallon fuel economy at rated engine speed as claimed by the manufacturer.

We, the undersigned, certify that this is a true and correct report of official Tractor Test **1430.**

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

Ford 6610 (16 X 4) Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Robert W. Kleis, Acting Dean and Director

NEBRASKA TRACTOR TEST 1431 — FORD 6610 (16 X 8) DIESEL
ALSO FORD 6710 (16 X 8) DIESEL
16 SPEED ALSO 8 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—596 rpm)								
72.30 (53.91)	2099	4.773 (18.068)	0.4[illegible] (0.277)	15.15 (2.984)	207 (97.2)	56 (13.3)	75 (23.8)	28.857 (97.445)
Standard Power Take-off Speed (540 rpm)—One Hour								
69.20 (51.60)	1900	4.485 (16.978)	0.447 (0.272)	15.43 (3.039)	211 (99.7)	55 (12.9)	75 (23.9)	28.860 (97.456)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
63.88 (47.64)	2182	4.145 (15.691)	0.448 (0.272)	15.41 (3.036)	194 (90.3)	55 (12.8)	76 (24.2)	....
0.00 (0.00)	2268	1.288 (4.876)	....	....	152 (66.4)	54 (12.3)	75 (23.9)	....
32.78 (24.44)	2240	2.653 (10.043)	0.558 (0.340)	12.35 (2.434)	164 (73.3)	54 (11.9)	74 (23.6)	....
73.44 (54.76)	2100	4.854 (18.374)	0.456 (0.277)	15.13 (2.980)	202 (94.2)	53 (11.7)	75 (23.9)	....
16.52 (12.32)	2255	1.931 (7.310)	0.806 (0.491)	8.55 (1.685)	158 (70.3)	53 (11.7)	74 (23.1)	....
48.48 (36.15)	2200	3.341 (12.647)	0.475 (0.289)	14.51 (2.858)	176 (80.0)	53 (11.7)	76 (24.2)	....
Av 39.18 Av (29.22)	2209	3.035 (11.489)	0.534 (0.325)	12.91 (2.543)	174 (79.1)	54 (12.2)	75 (23.9)	28.945 (97.405)

DRAWBAR PERFORMANCE WITH BIAS PLY TIRES

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 11th (6L) Gear											
61.37 (45.77)	3544 (15.76)	6.49 (10.45)	2098	5.06	4.658 (17.632)	0.523 (0.31[illegible])	13.18 (2.[illegible]96)	196 (90.8)	53 (11.7)	70 (21.1)	29.000 (97.939)
75% of Pull at Maximum Power—Ten Hours 11th (6L) Gear											
50.13 (37.39)	2715 (12.08)	6.92 (11.14)	2205	3.60	3.904 (14.778)	0.537 (0.327)	12.84 (2.530)	175 (79.7)	53 (11.7)	66 (18.9)	28.788 (97.313)
50% of Pull at Maximum Power—Two Hours 11th (6L) Gear											
34.08 (25.42)	1811 (8.05)	7.06 (11.36)	2224	2.65	3.135 (11.869)	0.634 (0.386)	10.87 (2.141)	149 (64.7)	44 (6.7)	50 (9.7)	29.065 (98.148)
50% of Pull at Reduced Engine Speed—Two Hours 13th (7L) Gear											
34.19 (25.49)	1811 (8.05)	7.08 (11.40)	1524	2.57	2.610 (9.879)	0.527 (0.320)	13.10 (2.580)	168 (75.5)	47 (8.[illegible])	57 (13.6)	29.075 (98.182)
MAXIMUM POWER IN SELECTED GEARS											
52.61 (39.23)	7948 (35.35)	2.48 (3.99)	2161	14.87	5th (3L) Gear			163 (72.8)	41 (5.0)	45 (7.2)	28.990 (97.895)
56.89 (42.42)	6606 (29.39)	3.23 (5.20)	2100	11.40	6th (3H) Gear			193 (89.4)	53 (11.7)	70 (21.1)	29.040 (98.064)
59.19 (44.13)	5937 (26.41)	3.74 (6.02)	2100	9.35	7th (4L) Gear			196 (91.1)	53 (11.[illegible])	70 (21.1)	29.050 (98.097)
60.42 (45.06)	5223 (23.23)	4.34 (6.98)	2098	7.76	8th (5L) Gear			197 (91.4)	53 (11.7)	70 (21.1)	29.060 (98.131)
58.41 (43.56)	4410 (19.61)	4.97 (7.99)	2100	6.35	9th (4H) Gear			195 (90.6)	52 (11.1)	70 (21.1)	29.070 (98.165)
60.12 (44.83)	3952 (17.58)	5.70 (9.18)	2099	5.73	10th (5H) Gear			195 (90.6)	50 (10.0)	66 (18.9)	29.140 (98.401)
62.64 (46.71)	3620 (16.10)	6.49 (10.44)	2097	5.10	11th (6L) Gear			193 (89.4)	52 (11.1)	69 (20.6)	29.100 (98.266)
59.97 (44.72)	2650 (11.79)	8.49 (13.66)	2100	3.60	12th (6H) Gear			194 (89.7)	52 (11.1)	70 (21.1)	29.080 (98.199)

Department of Agricultural Engineering

Dates of Test: April 13 to May 4, 1982

Manufacturer: FORD MOTOR COMPANY, Ford Tractor Operations, 2500 East Maple Road, Troy, Michigan 48084

FUEL, OIL AND TIME: **Fuel** No. 2 Diesel **Cetane No.** 46.5 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60°** *(15°/15°)* 0.8283 **Fuel weight** 6.897 lbs/gal *(0.827 kg/l)* **Oil SAE** 30 **API service classification** SE/SF-CC/CD **To motor** 1.851 gal *(7.005 l)* **Drained from motor** 1.599 gal *(6.055 l)* **Transmission and final drive lubricant** Ford 134 fluid **Total time engine was operated** 58.5 hours.

ENGINE: **Make** Ford Diesel **Type** four cylinder vertical **Serial No.** *E644056* **Crankshaft** lengthwise **Rated rpm** 2100 **Bore and stroke** 4.4" × 4.4" *(112 mm × 112 mm)* **Compression ratio** 16.3 to 1 **Displacement** 268 cu in *(4392 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements **Oil filter** one full flow paper cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for transmission and hydraulic oil, radiator for power steering fluid **Fuel filter** one paper element **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: **Type** standard **Serial No.** C680989 **Tread width** rear 60" *(1525 mm)* to 90" *(2285 mm)* front 52" *(1320 mm)* to 80" *(2032 mm)* **Wheel base** 87.5" *(2223 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from centerline of rear wheels 28.2" *(716 mm)* Vertical distance above roadway 32.9" *(837 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (2) range operator controlled powershift **Advertised speeds mph** *(km/h)* first 1.3 *(2.2)* second 1.7 *(2.8)* third 2.0 *(3.1)* fourth 2.5 *(4.0)* fifth 2.9 *(4.6)* sixth 3.7 *(5.9)* seventh 4.2 *(6.7)* eighth 4.8 *(7.7)* ninth 5.4 *(8.7)* tenth 6.1 *(9.9)* eleventh 6.9 *(11.2)* twelfth 8.9 *(14.4)* thirteenth 10.2 *(16.3)* fourteenth 13.1 *(21.0)* fifteenth 14.8 *(23.7)* sixteenth 19.0 *(30.6)* reverse 1.7 *(2.8)*, 2.2 *(3.6)*, 2.5 *(4.1)*, 3.3 *(5.3)*, 3.7 *(6.0)*, 4.8 *(7.7)*, 5.4 *(8.7)*, 6.9 *(11.2)* **Clutch** single plate dry disc operated by foot pedal **Brakes** wet multiple disc operated by two foot pedals which can be locked together **Steering** power assist **Turning radius** (on concrete surface with brake applied) right 120" *(3.05 m)* left 120" *(3.05 m)* (on concrete surface without brake) right 138" *(3.51 m)* left 138" *(3.51 m)* **Turning space diameter** (on concrete surface with brake applied) right 249" *(6.32 m)* left 249" *(6.32 m)* (on concrete surface without brake) right 294" *(7.47 m)* left 294" *(7.47 m)* **Power take-off** 540 rpm at 1900 engine rpm.

LUGGING ABILITY IN 11th (6L) GEAR

Crankshaft Speed rpm	2097	1891	1680	1474	1268	1054
Pull—lbs (kN)	3620 (16.10)	3811 (16.95)	3990 (17.75)	4069 (18.10)	3949 (17.57)	3754 (16.70)
Increase in Pull %	0	5	10	12	9	4
Power—Hp (kW)	62.64 (46.71)	59.27 (44.20)	54.95 (40.98)	49.08 (36.60)	41.06 (30.62)	32.48 (24.22)
Speed—Mph (km/h)	6.49 (10.44)	5.83 (9.39)	5.16 (8.31)	4.52 (7.28)	3.90 (6.28)	3.24 (5.22)
Slip %	5.10	5.38	5.66	5.80	5.66	5.52

TRACTOR SOUND LEVEL WITHOUT CAB	Radial dB(A)	Bias dB(A)
Maximum Available Power—Two Hours	95.5	96.0
75% of Pull at Maximum Power—Ten Hours		95.5
50% of Pull at Maximum Power—Two Hours		96.0
50% of Pull at Reduced Engine Speed—Two Hours		93.0
Bystander in 15th (8L) gear		88.5

DRAWBAR PERFORMANCE WITH RADIAL PLY TIRES

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 11th (6L) Gear											
63.07 (47.04)	3446 (15.33)	6.86 (11.05)	2098	2.55	4.640 (17.563)	0.507 (0.309)	13.59 (2.678)	182 (83.3)	52 (11.1)	57 (13.6)	29.140 (98.401)
MAXIMUM POWER IN SELECTED GEARS											
60.07 (44.80)	8162 (36.30)	2.76 (4.44)	2164	8.16	5th (3L) Gear			182 (83.1)	54 (12.2)	61 (16.1)	29.130 (98.368)
61.14 (45.59)	6431 (28.61)	3.57 (5.74)	2101	5.01	6th (3H) Gear			187 (86.1)	54 (12.2)	61 (16.1)	29.130 (98.368)
62.49 (46.60)	5760 (25.66)	4.06 (6.54)	2100	4.35	7th (4L) Gear			185 (84.7)	54 (12.2)	60 (15.6)	29.130 (98.368)
63.27 (47.18)	5086 (22.62)	4.66 (7.51)	2100	3.76	8th (5L) Gear			187 (86.1)	54 (12.2)	60 (15.6)	29.130 (98.368)
60.80 (45.34)	4310 (19.17)	5.29 (8.51)	2100	3.08	9th (4H) Gear			185 (85.0)	54 (12.2)	59 (15.0)	29.140 (98.401)
61.58 (45.92)	3805 (16.92)	6.07 (9.77)	2103	2.78	10th (5H) Gear			184 (84.4)	54 (12.2)	59 (15.0)	29.140 (98.401)
63.67 (47.48)	3475 (15.46)	6.87 (11.06)	2100	2.55	11th (6L) Gear			184 (84.4)	53 (11.7)	58 (14.4)	29.140 (98.401)
60.65 (45.23)	2563 (11.40)	8.87 (14.28)	2097	2.02	12th (6H) Gear			183 (83.9)	54 (12.2)	59 (15.0)	29.140 (98.401)

LUGGING ABILITY IN 11th (6L) GEAR

Crankshaft Speed rpm	2100	1902	1683	1478	1260	1057
Pull—lbs (kN)	3475 (15.46)	3731 (16.60)	3905 (17.36)	3981 (17.71)	3889 (17.30)	3714 (16.52)
Increase in Pull %	0	7	12	15	12	7
Power—Hp (kW)	63.67 (47.48)	61.83 (46.11)	57.16 (42.63)	51.16 (38.15)	42.60 (31.77)	34.18 (25.49)
Speed—Mph (km/h)	6.87 (11.06)	6.21 (10.00)	5.49 (8.84)	4.82 (7.75)	4.11 (6.61)	3.45 (5.55)
Slip %	2.55	2.65	2.78	2.93	2.78	2.78

REPAIRS and ADJUSTMENTS: During the lugging test the throttle linkage clip became disconnected. Test continued after the clip was reconnected.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump was maintained at 162°F *(72.2°C)*. Eight gears were chosen between 15% slip (bias ply tires), stability limit with radial ply tires and 10 mph *(16.1 km/h)*. This tractor did not attain the estimated 15.54 HP-HR per gallon fuel economy at rated engine speed as claimed by the manufacturer.

We, the undersigned, certify that this is a true and correct report of official Tractor Test **1431.**

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

Ford 6610 (16 X 8) Diesel

TIRES, BALLAST AND WEIGHT		BIAS PLY TIRES With Ballast	BIAS PLY TIRES Without Ballast	RADIAL PLY TIRES With Ballast	RADIAL PLY TIRES Without Ballast
Rear Tires	—No., size, ply & psi *(kPa)*	Two 18.4-34; 6; 16 *(110)*	Two 18.4-34; 6; 16 *(110)*	Two 18.4R34; 6; 16 *(110)*	Two 18.4R34; 6; 16 *(110)*
Ballast	—Liquid (each)	950 lb *(431 kg)*	None	950 lb *(431 kg)*	None
	—Cast Iron (each)	340 lb *(154 kg)*	None	278 lb *(126 kg)*	None
Front Tires	—No., size, ply & psi *(kPa)*	Two 7.50-18; 6; 40 *(275)*	Two 7.50-18; 6; 40 *(275)*	Two 7.50-18; 6; 40 *(275)*	Two 7.50-18; 6; 40 *(275)*
Ballast	—Liquid (each)	None	None	None	None
	—Cast Iron (each)	135 lb *(61 kg)*	None	135 lb *(61 kg)*	None
Height of Drawbar		21 in *(535 mm)*	21 in *(535 mm)*	21 in *(535 mm)*	21 in *(535 mm)*
Static Weight with Operator	—Rear	7250 lb *(3289 kg)*	4670 lb *(2118 kg)*	7250 lb *(3289 kg)*	4795 lb *(2175 kg)*
	—Front	2450 lb *(1111 kg)*	2180 lb *(989 kg)*	2450 lb *(1111 kg)*	2180 lb *(989 kg)*
	—Total	9700 lb *(4400 kg)*	6850 lb *(3107 kg)*	9700 lb *(4400 kg)*	6975 lb *(3164 kg)*

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Robert W. Kleis, Acting Dean and Director

NEBRASKA TRACTOR TEST 1432 — FORD 7610 (16 X 4) DIESEL
ALSO FORD 7710 (16 X 4) DIESEL
16 SPEED ALSO 8 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1025 rpm)								
86.95 (64.84)	2100	5.595 (21.179)	0.444 (0.270)	15.54 (3.062)	196 (91.2)	55 (12.6)	75 (24.0)	29.170 (98.503)
Standard Power Take-off Speed (1000 rpm)—One Hour								
86.79 (64.72)	2048	5.510 (20.858)	0.438 (0.266)	15.75 (3.103)	197 (91.9)	55 (12.7)	75 (24.1)	29.110 (98.300)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
78.26 (58.36)	2224	5.307 (20.089)	0.468 (0.285)	14.75 (2.905)	190 (87.8)	55 (12.8)	75 (23.9)	....
0.00 (0.00)	2262	1.636 (6.193)	....	....	169 (76.1)	54 (12.5)	74 (23.6)	....
39.60 (29.53)	2251	3.428 (12.976)	0.597 (0.363)	11.55 (2.276)	172 (78.1)	54 (12.2)	75 (23.9)	....
87.81 (65.48)	2099	5.660 (21.425)	0.444 (0.270)	15.51 (3.056)	194 (89.7)	54 (12.2)	75 (23.9)	....
20.00 (14.91)	2271	2.528 (9.570)	0.872 (0.530)	7.91 (1.558)	171 (77.2)	55 (12.8)	76 (24.2)	....
59.94 (44.70)	2236	4.329 (16.387)	0.506 (0.308)	13.84 (2.727)	177 (80.6)	55 (12.8)	76 (24.4)	....
Av 47.45 Av. (35.38)	2227	3.815 (14.441)	0.554 (0.337)	12.44 (2.450)	179 (81.6)	55 (12.6)	75 (24.0)	29.000 (98.199)

DRAWBAR PERFORMANCE
(Front Wheel Drive Disengaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 10th (6L) Gear											
74.08 (55.24)	5027 (22.36)	5.53 (8.89)	2100	6.78	5.547 (20.997)	0.516 (0.314)	13.36 (2.631)	187 (85.8)	57 (13.6)	71 (21.7)	28.775 (97.169)
75% of Pull at Maximum Power—Ten Hours 10th (6L) Gear											
58.94 (43.95)	3675 (16.35)	6.01 (9.68)	2244	5.08	4.796 (18.156)	0.561 (0.341)	12.29 (2.421)	172 (78.0)	47 (8.2)	51 (10.5)	28.863 (97.466)
50% of Pull at Maximum Power—Two Hours 10th (6L) Gear											
40.16 (29.95)	2450 (10.90)	6.15 (9.89)	2263	3.82	3.879 (14.684)	0.666 (0.405)	10.35 (2.039)	171 (77.2)	47 (8.3)	49 (9.2)	28.765 (97.405)
50% of Pull at Reduced Engine Speed—Two Hours 13th (7L) Gear											
40.25 (30.02)	2450 (10.90)	6.16 (9.92)	1290	3.08	3.065 (11.59[illegible])	0.525 (0.319)	13.14 (2.589)	169 (76.1)	47 (8.3)	49 (9.4)	28.760 (97.388)

MAXIMUM POWER IN SELECTED GEARS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Gear	Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
60.91 (45.42)	8804 (39.16)	2.59 (4.18)	2221	14.85	5th (3L) Gear	173 (78.3)	44 (6.7)	46 (7.8)	28.810 (97.287)
68.16 (50.83)	7820 (34.79)	3.27 (5.26)	2101	11.76	6th (3H) Gear	175 (79.2)	46 (7.8)	50 (10.0)	28.800 (97.253)
70.55 (52.61)	7564 (33.65)	3.50 (5.63)	2100	11.70	7th (4L) Gear	186 (85.6)	56 (13.3)	68 (20.0)	28.780 (97.186)
73.44 (54.77)	6361 (28.30)	4.33 (6.97)	2101	8.82	8th (5L) Gear	184 (84.4)	55 (12.8)	67 (19.4)	28.780 (97.186)
72.03 (53.71)	5743 (25.54)	4.70 (7.57)	2101	7.78	9th (4H) Gear	183 (83.6)	55 (12.8)	66 (18.9)	28.780 (97.186)
74.22 (55.35)	5034 (22.39)	5.53 (8.90)	2101	6.71	10th (6L) Gear	178 (80.8)	51 (10.6)	58 (14.4)	28.790 (97.220)
73.84 (55.07)	4851 (21.58)	5.71 (9.19)	2098	6.44	11th (5H) Gear	180 (81.9)	53 (11.7)	62 (16.7)	28.790 (97.220)
74.16 (55.30)	3839 (17.07)	7.25 (11.66)	2101	4.92	12th (6H) Gear	179 (81.7)	54 (12.2)	64 (17.8)	28.790 (97.220)
71.61 (53.40)	2690 (11.96)	9.98 (16.07)	2098	3.57	13th (7L) Gear	180 (81.9)	54 (12.2)	65 (18.3)	28.780 (97.186)

Department of Agricultural Engineering

Dates of Test: April 14 to May 10, 1982

Manufacturer: FORD MOTOR COMPANY, Ford Tractor Operations, 2500 East Maple Road, Troy, Michigan 48084

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 46.5 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60°** *(15°/15°)* 0.8282 **Fuel weight** 6.896 lbs/gal *(0.826 kg/l)* **Oil SAE 30 API service classification** SE/SF-CC/CD **To motor** 1.680 gal *(6.359 l)* **Drained from motor** 1.573 gal *(5.954 l)* **Transmission and hydraulic lubricant** Ford 134 fluid **Front axle lubricant** Ford EOAZ-19580 fluid **Total time engine was operated** 50.5 hours.

ENGINE: Make Ford Diesel **Type** four cylinder vertical with turbocharger **Serial No.** *F635687* **Crankshaft** lengthwise **Rated rpm** 2100 **Bore and stroke** 4.4" × 4.4" *(112 mm × 112 mm)* **Compression ratio** 15.6 to 1 **Displacement** 268 cu in *(4392 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements with centrifugal precleaner **Oil filter** one full flow paper cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil, radiator for power steering fluid **Fuel filter** one paper element **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: Type front wheel assist **Serial No.** *C681545* **Tread width** rear 60" *(1525 mm)* to 90" *(2286 mm)* front 60" *(1525 mm)* to 80" *(2032 mm)* **Wheel base** 88.8" *(2255 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 31.4" *(798 mm)* Vertical distance above roadway 39.9" *(1013 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (2) range operator controlled powershift **Advertised speeds mph** *(km/h)* first 1.3 *(2.2)* second 1.7 *(2.7)* third 1.7 *(2.8)* fourth 2.2 *(3.5)* fifth 2.9 *(4.7)* sixth 3.8 *(6.1)* seventh 4.0 *(6.5)* eighth 4.8 *(7.8)* ninth 5.2 *(8.4)* tenth 6.0 *(9.7)* eleventh 6.2 *(10.0)* twelfth 7.8 *(12.5)* thirteenth 10.6 *(17.0)* fourteenth 13.6 *(21.8)* fifteenth 14.5 *(23.4)* sixteenth 18.6 *(30.0)* reverse 1.9 *(3.1)*, 2.5 *(4.0)*, 7.0 *(11.2)*, 8.9 *(14.4)* **Clutch** single plate dry disc operated by foot pedal **Brakes** wet multiple disc operated by two foot pedals which can be locked together **Steering** power assist **Turning radius** (on concrete surface with brake applied) right 194" *(4.93 m)* left 194" *(4.93 m)* (on concrete surface without brake) right 209" *(5.30 m)* left 209" *(5.30 m)* **Turning space diameter** (on concrete surface with brake applied) right 395" *(10.03 m)* left 395" *(10.03 m)* (on concrete surface without brake) right 425" *(10.79 m)* left 425" *(10.79 m)* **Power take-off** 540 rpm at 1900 engine rpm and 1000 rpm at 2048 engine rpm.

LUGGING ABILITY IN 10th (6L) GEAR

Crankshaft Speed rpm	2101	1898	1679	1484	1266	1056
Pull—lbs (kN)	5034 (22.39)	5457 (24.27)	5740 (25.53)	5849 (26.02)	5360 (23.84)	4838 (21.52)
Increase in Pull %	0	8	14	16	6	-4
Power—Hp (kW)	74.22 (55.35)	72.20 (53.84)	66.85 (49.85)	60.10 (44.82)	47.33 (35.29)	36.09 (26.91)
Speed—Mph (km/h)	5.53 (8.90)	4.96 (7.98)	4.37 (7.03)	3.85 (6.20)	3.31 (5.33)	2.80 (4.50)
Slip %	6.71	7.45	7.71	7.98	7.18	6.10

TRACTOR SOUND LEVEL WITH CAB	dB(A)	Front Wheel Drive Disengaged dB(A)
Maximum Available Power—Two Hours	84.5	83.5
75% of Pull at Maximum Power—Ten Hours		85.0
50% of Pull at Maximum Power—Two Hours		83.5
50% of Pull at Reduced Engine Speed—Two Hours		80.0
Bystander in 16th (8H) gear		85.5

DRAWBAR PERFORMANCE
(Front Wheel Drive Engaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 10th (6L) Gear											
74.91 (55.86)	4987 (22.18)	5.63 (9.06)	2099	5.78	5.547 (20.997)	0.511 (0.311)	13.50 (2.660)	190 (87.5)	58 (14.2)	74 (23.1)	28.755 (97.101)

MAXIMUM POWER IN SELECTED GEARS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Gear	Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
65.39 (48.76)	9560 (42.52)	2.56 (4.13)	2178	14.94	5th (3L) Gear	174 (78.6)	45 (7.2)	48 (8.9)	28.810 (97.287)
74.49 (55.55)	6321 (28.12)	4.42 (7.11)	2100	7.75	8th (5L) Gear	186 (85.3)	55 (12.8)	67 (19.4)	28.780 (97.186)
75.54 (56.33)	5027 (22.36)	5.64 (9.07)	2100	5.78	10th (6L) Gear	189 (87.2)	57 (13.9)	73 (22.8)	28.750 (97.084)

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi *(kPa)*	Two 18.4-34; 6; 16 *(110)*	Two 18.4-34; 6; 16 *(110)*
Ballast	—Liquid (each)	897 lb *(407 kg)*	None
	—Cast Iron (each)	150 lb *(68 kg)*	None
Front Tires	—No., size, ply & psi *(kPa)*	Two 13.6-24; 8; 22 *(150)*	Two 13.6-24; 8; 22 *(150)*
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	62 lb *(28 kg)*	None
Height of Drawbar		20 in *(510 mm)*	20 in *(510 mm)*
Static Weight with Operator—Rear		7700 lb *(34[illegible] kg)*	5605 lb *(2542 kg)*
—Front		3100 lb *(1406 kg)*	2975 lb *(1350 kg)*
—Total		10800 lb *(4899 kg)*	8580 lb *(3892 kg)*

Ford 7610 (16 X 4) Diesel

REPAIRS and ADJUSTMENTS: During preliminary PTO tests, all fuel injectors and both air filter elements were replaced.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump was maintained at 145°F *(62.8°C)*. Nine gears were chosen between 15% slip and 10 mph *(16.1 km/h)*. The radiator temperature indicator did not function during test. This tractor did not attain the estimated 15.90 HP-HR per gallon fuel economy at rated engine speed as claimed by the manufacturer. During inspection the exhaust valve stem of the No. 1 cylinder was found scored over a distance of about ¾ inch (20 mm).

We, the undersigned, certify that this is a true and correct report of official Tractor Test **1432**.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Robert W. Klein, Acting Dean and Director

NEBRASKA TRACTOR TEST 1433 — FORD 7710 (16 X 8) DIESEL
ALSO FORD 7610 (16 X 8) DIESEL
16 SPEED ALSO 8 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1086 rpm)								
86.62 *(64.59)*	2100	5.521 *(20.899)*	0.440 *(0.267)*	15.69 *(3.091)*	194 *(90.3)*	57 *(13.8)*	75 *(23.7)*	28.835 *(97.366)*
Standard Power Take-off Speed (1000 rpm)—One Hour								
86.55 *(64.54)*	2048	5.452 *(20.638)*	0.434 *(0.264)*	15.87 *(3.127)*	194 *(89.8)*	57 *(14.1)*	75 *(23.8)*	28.825 *(97.338)*
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
76.40 *(56.97)*	2180	5.086 *(19.253)*	0.459 *(0.279)*	15.02 *(2.959)*	188 *(86.9)*	58 *(14.4)*	74 *(23.6)*	....
0.00 *(0.00)*	2242	1.601 *(6.060)*	....	....	169 *(76.1)*	58 *(14.4)*	75 *(23.9)*	....
38.68 *(28.84)*	2208	3.298 *(12.484)*	0.588 *(0.358)*	11.73 *(2.310)*	172 *(77.8)*	58 *(14.5)*	75 *(23.9)*	....
86.78 *(64.71)*	2100	5.564 *(21.062)*	0.442 *(0.269)*	15.60 *(3.072)*	191 *(88.3)*	58 *(14.4)*	76 *(24.2)*	....
19.57 *(14.59)*	2233	2.441 *(9.240)*	0.860 *(0.523)*	8.02 *(1.579)*	173 *(78.3)*	57 *(13.9)*	74 *(23.6)*	....
57.49 *(42.87)*	2186	4.142 *(15.679)*	0.497 *(0.302)*	13.88 *(2.734)*	174 *(78.6)*	57 *(13.9)*	74 *(23.3)*	....
Av 46.49 *Av (34.67)*	**2192**	**3.688** *(13.961)*	**0.547** *(0.333)*	**12.60** *(2.485)*	**178** *(81.0)*	**58** *(14.2)*	**75** *(23.8)*	**28.818** *(97.287)*

DRAWBAR PERFORMANCE WITH BIAS PLY TIRES

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 11th (6L) Gear											
72.33 *(53.94)*	4219 *(18.77)*	6.43 *(10.35)*	2101	5.18	5.292 *(20.033)*	0.505 *(0.307)*	13.67 *(2.692)*	174 *(78.6)*	47 *(8.3)*	62 *(16.4)*	29.350 *(99.111)*
75% of Pull at Maximum Power—Ten Hours 11th (6L) Gear											
58.67 *(43.75)*	3227 *(14.35)*	6.82 *(10.97)*	2202	4.18	4.785 *(18.115)*	0.563 *(0.342)*	12.26 *(2.415)*	172 *(77.9)*	42 *(5.7)*	54 *(12.2)*	29.288 *(98.901)*
50% of Pull at Maximum Power—Two Hours 11th (6L) Gear											
40.15 *(29.94)*	2151 *(9.57)*	7.00 *(11.27)*	2223	2.53	3.879 *(14.684)*	0.666 *(0.405)*	10.35 *(2.039)*	170 *(76.7)*	42 *(5.3)*	47 *(8.1)*	29.435 *(99.398)*
50% of Pull at Reduced Engine Speed—Two Hours 13th (7L) Gear											
40.15 *(29.93)*	2150 *(9.56)*	7.00 *(11.26)*	1520	2.49	3.118 *(11.802)*	0.536 *(0.326)*	12.87 *(2.536)*	169 *(75.8)*	44 *(6.7)*	53 *(11.7)*	29.450 *(99.448)*
MAXIMUM POWER IN SELECTED GEARS											
57.50 *(42.88)*	8638 *(38.42)*	2.50 *(4.02)*	2196	14.89	5th (3L) Gear			172 *(77.8)*	42 *(5.6)*	51 *(10.6)*	29.230 *(98.705)*
65.04 *(48.50)*	7820 *(34.78)*	3.12 *(5.02)*	2101	13.64	6th (3H) Gear			174 *(78.6)*	48 *(8.9)*	61 *(16.1)*	29.380 *(99.212)*
68.40 *(51.01)*	6998 *(31.13)*	3.67 *(5.90)*	2102	10.29	7th (4L) Gear			174 *(78.9)*	48 *(8.9)*	61 *(16.1)*	29.380 *(99.212)*
70.42 *(52.51)*	6195 *(27.55)*	4.26 *(6.86)*	2098	8.50	8th (5L) Gear			174 *(78.9)*	48 *(8.9)*	61 *(16.1)*	29.380 *(99.212)*
68.50 *(51.08)*	5250 *(23.35)*	4.89 *(7.88)*	2101	6.72	9th (4H) Gear			174 *(78.9)*	48 *(8.9)*	61 *(16.1)*	29.380 *(99.212)*
69.95 *(52.16)*	4660 *(20.73)*	5.63 *(9.06)*	2097	5.98	10th (5H) Gear			174 *(78.9)*	48 *(8.9)*	61 *(16.1)*	29.380 *(99.212)*
73.24 *(54.61)*	4276 *(19.02)*	6.42 *(10.34)*	2101	5.35	11th (6L) Gear			173 *(78.3)*	47 *(8.3)*	59 *(15.0)*	29.390 *(99.246)*
70.59 *(52.64)*	3154 *(14.03)*	8.39 *(13.51)*	2098	3.73	12th (6H) Gear			174 *(78.9)*	48 *(8.9)*	60 *(15.6)*	29.380 *(99.212)*

Department of Agricultural Engineering

Dates of Test: April 2 to May 3, 1982

Manufacturer: FORD MOTOR COMPANY, Ford Tractor Operations, 2500 East Maple Road, Troy, Michigan 48084

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 46.5 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60°** *(15°/15°)* 0.8282 **Fuel weight** 6.896 lbs/gal *(0.826 kg/l)* **Oil SAE** 30 **API service classification** SE/SF-CC/CD **To motor** 1.383 gal *(7.129 l)* **Drained from motor** 1.465 gal *(5.547 l)* **Transmission and hydraulic lubricant** Ford 134 fluid **Total time engine was operated** 61.5 hours.

ENGINE: Make Ford Diesel **Type** four cylinder vertical with turbocharger **Serial No.** *F635268* **Crankshaft** lengthwise **Rated rpm** 2100 **Bore and stroke** 4.4" × 4.4" *(112 mm × 112 mm)* **Compression ratio** 15.6 to 1 **Displacement** 268 cu in *(4392 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements with centrifugal precleaner **Oil filter** one full flow paper cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** one paper element **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: Type standard **Serial No.** C681212 **Tread width** rear 60" *(1525 mm)* to 90" *(2285 mm)* front 56" *(1422 mm)* to 84" *(2134 mm)* **Wheel base** 101.6" *(2580 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 31.6" *(804 mm)* Vertical distance above roadway 43.5" *(1105 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (2) range operator controlled powershift **Advertised speeds mph** *(km/h)* **first** 1.3 *(2.2)* second 1.7 *(2.8)* third 2.0 *(3.1)* fourth 2.5 *(4.0)* fifth 2.9 *(4.6)* sixth 3.7 *(5.9)* seventh 4.2 *(6.7)* eighth 4.8 *(7.7)* ninth 5.4 *(8.7)* tenth 6.1 *(9.9)* eleventh 6.9 *(11.2)* twelfth 8.9 *(14.4)* thirteenth 10.2 *(16.3)* fourteenth 13.1 *(21.0)* fifteenth 14.8 *(23.7)* sixteenth 19.0 *(30.6)* reverse 1.7 *(2.8)*, 2.2 *(3.6)*, 2.5 *(4.1)*, 3.3 *(5.3)*, 3.7 *(6.0)*, 4.8 *(7.7)*, 5.4 *(8.7)*, 6.9 *(11.2)* **Clutch** single plate dry disc operated by foot pedal **Brakes** wet multiple disc operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 147" *(3.73 m)* left 147" *(3.73 m)* (on concrete surface without brake) right 169" *(4.29 m)* left 169" *(4.29 m)* **Turning space diameter** (on concrete surface with brake applied) right 302" *(7.67 m)* left 302" *(7.67 m)* (on concrete surface without brake) right 346" *(8.79 m)* left 346" *(8.79 m)* **Power take-off** 1000 rpm at 2048 engine rpm and 540 rpm at 1900 engine rpm.

LUGGING ABILITY IN 11th (6L) GEAR

Crankshaft Speed rpm	2101	1898	1690	1481	1246	1070
Pull—lbs *(kN)*	4276 *(19.02)*	4587 *(20.40)*	4836 *(21.51)*	4922 *(21.89)*	4358 *(19.39)*	4078 *(18.14)*
Increase in Pull %	0	7	13	15	2	–5
Power—Hp *(kW)*	73.24 *(54.61)*	70.58 *(52.63)*	66.01 *(49.23)*	58.65 *(43.73)*	44.12 *(32.90)*	35.55 *(26.51)*
Speed—Mph *(km/h)*	6.42 *(10.34)*	5.77 *(9.29)*	5.12 *(8.24)*	4.47 *(7.19)*	3.80 *(6.11)*	3.27 *(5.26)*
Slip %	5.35	5.83	6.24	6.38	5.56	5.28

TRACTOR SOUND LEVEL WITH CAB	Radials dB(A)	Bias dB(A)
Maximum Available Power—Two Hours	83.0	82.5
75% of Pull at Maximum Power—Ten Hours		84.0
50% of Pull at Maximum Power—Two Hours		84.5
50% of Pull at Reduced Engine Speed—Two Hours		79.5
Bystander in 16th (8H) gear		88.0

DRAWBAR PERFORMANCE WITH RADIAL PLY TIRES

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 11th (6L) Gear											
74.09 *(55.25)*	4027 *(17.91)*	6.89 *(11.10)*	2099	2.37	5.347 *(20.242)*	0.498 *(0.303)*	13.86 *(2.727)*	173 *(78.3)*	44 *(6.7)*	53 *(11.4)*	29.215 *(98.655)*
MAXIMUM POWER IN SELECTED GEARS											
65.25 *(48.66)*	9615 *(42.77)*	2.55 *(4.10)*	2132	14.42	5th (3L) Gear			174 *(78.6)*	49 *(9.4)*	53 *(11.7)*	29.010 *(97.962)*
71.11 *(53.02)*	7468 *(33.22)*	3.57 *(5.75)*	2102	5.21	6th (3H) Gear			173 *(78.3)*	49 *(9.4)*	53 *(11.7)*	29.010 *(97.962)*
72.66 *(54.18)*	6685 *(29.73)*	4.08 *(6.56)*	2099	4.11	7th (4L) Gear			174 *(78.9)*	49 *(9.4)*	53 *(11.7)*	29.010 *(97.962)*
73.78 *(55.02)*	5896 *(26.22)*	4.69 *(7.55)*	2102	3.44	8th (5L) Gear			174 *(78.9)*	49 *(9.4)*	53 *(11.7)*	29.010 *(97.962)*
71.11 *(53.02)*	5017 *(22.31)*	5.32 *(8.55)*	2100	2.98	9th (4H) Gear			174 *(78.9)*	48 *(8.9)*	52 *(11.1)*	29.010 *(97.962)*
71.86 *(53.58)*	4424 *(19.68)*	6.09 *(9.80)*	2101	2.60	10th (5H) Gear			174 *(78.9)*	48 *(8.9)*	52 *(11.1)*	29.010 *(97.962)*
74.84 *(55.80)*	4071 *(18.11)*	6.89 *(11.10)*	2098	2.45	11th (6L) Gear			173 *(78.3)*	48 *(8.9)*	52 *(11.1)*	29.010 *(97.962)*
71.82 *(53.55)*	3017 *(13.42)*	8.93 *(14.37)*	2100	1.75	12th (6H) Gear			173 *(78.3)*	48 *(8.9)*	52 *(11.1)*	29.010 *(97.962)*

LUGGING ABILITY IN 11th (6L) GEAR

Crankshaft Speed rpm	2098	1897	1673	1479	1258	1056
Pull—lbs *(kN)*	4071 *(18.11)*	4409 *(19.61)*	4601 *(20.47)*	4626 *(20.58)*	4215 *(18.75)*	3925 *(17.46)*
Increase in Pull %	0	8	13	14	4	–4
Power—Hp *(kW)*	74.84 *(55.80)*	73.16 *(54.56)*	67.26 *(50.16)*	59.75 *(44.55)*	46.40 *(34.60)*	36.33 *(27.09)*
Speed—Mph *(km/h)*	6.89 *(11.10)*	6.22 *(10.01)*	5.48 *(8.82)*	4.84 *(7.79)*	4.13 *(6.64)*	3.47 *(5.59)*
Slip %	2.45	2.60	2.60	2.60	2.45	2.30

TIRES, BALLAST AND WEIGHT		Bias Ply Tires With Ballast	Bias Ply Tires Without Ballast	Radial Ply Tires With Ballast	Radial Ply Tires Without Ballast
Rear Tires	—No., size, ply & psi (kPa)	Two 18.4-34; 6; 16 *(110)*	Two 18.4-34; 6; 16 *(110)*	Two 18.4R34; 6; 16 *(110)*	Two 18.4R34; 6; 16 *(110)*
Ballast	—Liquid (each)	890 lb *(404 kg)*	None	948 lb *(430 kg)*	None
	—Cast Iron (each)	120 lb *(54 kg)*	None	None	None
Front Tires	—No., size, ply & psi (kPa)	Two 7.50-18; 6; 40 *(275)*	Two 7.50-18; 6; 40 *(275)*	Two 7.50-18; 6; 40 *(275)*	Two 7.50-18; 6; 40 *(275)*
Ballast	—Liquid (each)	None	None	None	None
	—Cast Iron (each)	65 lb *(29 kg)*	None	65 lb *(29 kg)*	None
Height of Drawbar		20.5 in *(520 mm)*	20.5 in *(520 mm)*	20.5 in *(520 mm)*	20.5 in *(520 mm)*
Static Weight with Operator	—Rear	8030 lb *(3643 kg)*	6010 lb *(2726 kg)*	8030 lb *(3643 kg)*	6135 lb *(2783 kg)*
	—Front	2770 lb *(1256 kg)*	2640 lb *(1198 kg)*	2770 lb *(1256 kg)*	2640 lb *(1197 kg)*
	—Total	10800 lb *(4899 kg)*	8650 lb *(3924 kg)*	10800 lb *(4899 kg)*	8775 lb *(3980 kg)*

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection was maintained at 140°F *(60.0°C)*. Eight gears were chosen between 15% slip and 10 mph *(16.1 km/h)*. This tractor did not attain the estimated 15.90 HP-HR per gallon fuel economy at rated engine speed as claimed by the manufacturer.

We, the undersigned, certify that this is a true and correct report of official Tractor Test 1433.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

Ford 7710 (16 X 8) Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Robert W. Kleis, Acting Dean and Director

NEBRASKA TRACTOR TEST 1434 — JOHN DEERE 8850 DIESEL 16 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—996 rpm)								
303.99 *(226.69)*	2100	19.311 *(73.100)*	0.442 *(0.269)*	15.74 *(3.101)*	188 *(86.9)*	65 *(18.4)*	76 *(24.4)*	28.730 *(97.017)*
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
263.80 *(196.72)*	2141	17.417 *(65.931)*	0.460 *(0.280)*	15.15 *(2.984)*	186 *(85.3)*	66 *(18.9)*	78 *(25.8)*	....
0.00 *(0.00)*	2240	5.075 *(19.211)*	....	....	170 *(76.7)*	66 *(18.6)*	77 *(25.0)*	....
134.65 *(100.41)*	2194	11.343 *(42.938)*	0.587 *(0.357)*	11.87 *(2.338)*	176 *(79.7)*	65 *(18.3)*	76 *(24.7)*	....
302.56 *(225.62)*	2100	19.312 *(73.104)*	0.445 *(0.270)*	15.67 *(3.086)*	190 *(87.5)*	67 *(19.4)*	76 *(24.2)*	....
68.17 *(50.83)*	2220	8.142 *(30.821)*	0.832 *(0.506)*	8.37 *(1.649)*	174 *(78.6)*	66 *(18.9)*	74 *(23.3)*	....
200.14 *(149.24)*	2172	14.332 *(54.253)*	0.499 *(0.303)*	13.96 *(2.751)*	180 *(81.9)*	67 *(19.4)*	76 *(24.2)*	....
Av 161.55 **Av *(120.47)***	**2178**	**12.603** ***(47.708)***	**0.543** ***(0.331)***	**12.82** ***(2.525)***	**179** ***(81.6)***	**66** ***(18.9)***	**76** ***(24.4)***	**28.717** ***(96.972)***

DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 7th (C1) Gear											
269.77 *(201.17)*	19317 *(85.92)*	5.24 *(8.43)*	2101	3.99	19.188 *(72.634)*	0.495 *(0.301)*	14.06 *(2.770)*	187 *(85.8)*	66 *(18.9)*	78 *(25.6)*	28.800 *(97.253)*
75% of Pull at Maximum Power—Ten Hours 7th (C1) Gear											
213.27 *(159.03)*	14735 *(65.54)*	5.43 *(8.73)*	2153	2.94	15.982 *(60.499)*	0.522 *(0.317)*	13.34 *(2.629)*	180 *(82.4)*	66 *(19.0)*	75 *(23.7)*	28.762 *(97.125)*
50% of Pull at Maximum Power—Two Hours 7th (C1) Gear											
147.39 *(109.91)*	9951 *(44.26)*	5.55 *(8.94)*	2190	2.19	12.654 *(47.902)*	0.598 *(0.364)*	11.65 *(2.294)*	177 *(80.6)*	61 *(16.4)*	63 *(17.2)*	28.815 *(97.304)*
50% of Pull at Reduced Engine Speed—Two Hours 10th (D1) Gear											
147.62 *(110.08)*	9948 *(44.25)*	5.56 *(8.96)*	1350	1.99	10.698 *(40.496)*	0.505 *(0.307)*	13.80 *(2.718)*	176 *(80.0)*	62 *(16.7)*	68 *(19.7)*	28.820 *(97.321)*
MAXIMUM POWER IN SELECTED GEARS											
210.04 *(156.63)*	35330 *(157.16)*	2.23 *(3.59)*	2140	14.51	2nd (A2) Gear			178 *(80.8)*	61 *(16.1)*	64 *(17.8)*	28.760 *(97.118)*
265.87 *(198.26)*	28981 *(128.91)*	3.44 *(5.54)*	2101	7.31	3rd (A3) Gear			183 *(83.6)*	62 *(16.7)*	69 *(20.6)*	28.850 *(97.422)*
268.28 *(200.06)*	25707 *(114.35)*	3.91 *(6.30)*	2101	5.91	4th (B1) Gear			186 *(85.3)*	64 *(17.8)*	74 *(23.3)*	28.830 *(97.355)*
259.95 *(193.84)*	22123 *(98.41)*	4.41 *(7.09)*	2100	4.76	5th (A4) Gear			187 *(85.8)*	64 *(17.8)*	74 *(23.3)*	28.830 *(97.355)*
265.33 *(197.86)*	20026 *(89.08)*	4.97 *(8.00)*	2099	4.22	6th (B2) Gear			186 *(85.6)*	64 *(17.8)*	73 *(22.8)*	28.830 *(97.355)*
274.25 *(204.51)*	19646 *(87.39)*	5.23 *(8.42)*	2101	3.99	7th (C1) Gear			186 *(85.3)*	64 *(17.8)*	71 *(21.7)*	28.850 *(97.422)*
272.91 *(203.51)*	15530 *(69.08)*	6.59 *(10.61)*	2098	3.04	8th (C2) Gear			186 *(85.6)*	64 *(17.8)*	74 *(23.3)*	28.820 *(97.321)*
272.94 *(203.53)*	13990 *(62.23)*	7.32 *(11.77)*	2100	2.72	9th (B3) Gear			186 *(85.6)*	64 *(17.8)*	74 *(23.3)*	28.820 *(97.321)*
272.53 *(203.22)*	11818 *(52.57)*	8.65 *(13.92)*	2101	2.24	10th (D1) Gear			186 *(85.6)*	65 *(18.3)*	75 *(23.9)*	28.820 *(97.321)*

Department of Agricultural Engineering

Dates of Test: May 11-21, 1982

Manufacturer: JOHN DEFRE TRACTOR WORKS, Waterloo, Iowa 50704

FUEL, OIL AND TIME: **Fuel** No. 2 Diesel **Cetane No.** 46.6 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60°** *(15°/15°)* 0.8364 **Fuel weight** 6.964 lbs/gal *(0.835 kg/l)* **Oil SAE** 15W40 **API service classification** CD CC SD **To motor** 11.254 gal *(42.600 l)* **Drained from motor** 10.284 gal *(38.928 l)* **Transmission and final drive lubricant** John Deere Hy-Gard transmission and hydraulic oil **Total time engine was operated** 43.0 hours.

ENGINE: **Make** John Deere Diesel **Type** eight cylinder vee with turbocharger and intercooler **Serial No.** 8955AR-01 001842 RG **Crankshaft** lengthwise **Rated rpm** 2100 **Bore and stroke** 5.51" × 5.00" *(140 mm × 127 mm)* **Compression ratio** 14.5 to 1 **Displacement** 955 cu in *(15649 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements with aspirator **Oil filter** two full flow cartridges and one bypass cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Muffler** vertical **Cooling medium temperature control** four thermostats and variable speed fan.

CHASSIS: **Type** four wheel drive with duals **Serial No.** *RW8850H 002113* **Tread width** rear 82" *(2080 mm)* to 140" *(3570 mm)* front 82" *(2080 mm)* to 140" *(3570 mm)* **Wheel base** 133" *(3380 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 78.7" *(1998 mm)* Vertical distance above roadway 40.5" *(1029 mm)* Horizontal distance from center of rear wheel tread 0.2" *(6 mm)* to the right **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (2) range operator controlled powershift **Advertised speeds mph (km/h)** first 2.1 *(3.4)* second 2.6 *(4.2)* third 3.8 *(6.0)* fourth 4.2 *(6.8)* fifth 4.7 *(7.6)* sixth 5.3 *(8.5)* seventh 5.5 *(8.9)* eighth 6.9 *(11.1)* ninth 7.6 *(12.3)* tenth 9.0 *(14.4)* eleventh 9.5 *(15.3)* twelfth 10.0 *(16.1)* thirteenth 11.2 *(18.0)* fourteenth 12.5 *(20.0)* fifteenth 16.2 *(26.0)* sixteenth 20.2 *(32.5)* reverse 4.0 *(6.4)*, 4.9 *(8.0)*, 8.0 *(12.9)*, 10.0 *(16.1)*, 10.5 *(17.0)*, 13.2 *(21.2)* **Clutch** wet multiple disc hydraulically power actuated and operated by foot pedal **Brakes** wet disc hydraulically power actuated and operated by foot pedal **Steering** hydrostatic and articulated **Turning radius** (on concrete surface without brake) right 264" *(6.71 m)* left 264" *(6.71 m)* **Turning space diameter** (on concrete surface without brake) right 542" *(13.77 m)* left 542" *(13.77 m)* **Power take-off** 996 rpm at 2100 engine rpm.

LUGGING ABILITY IN 7th (C1) GEAR

Crankshaft Speed rpm	2101	1890	1677	1466	1259	1066
Pull—lbs *(kN)*	19646 *(87.39)*	23032 *(102.34)*	25340 *(112.72)*	25460 *(113.25)*	23918 *(106.39)*	21525 *(95.74)*
Increase in Pull %	0	17	29	30	22	10
Power—Hp *(kW)*	274.25 *(204.51)*	285.79 *(213.11)*	277.53 *(206.95)*	243.21 *(181.36)*	196.72 *(146.69)*	150.98 *(112.59)*
Speed—Mph *(km/h)*	5.23 *(8.42)*	4.65 *(7.48)*	4.11 *(6.61)*	3.58 *(5.76)*	3.08 *(4.96)*	2.63 *(4.23)*
Slip %	3.99	5.15	5.60	5.75	5.60	4.84

TRACTOR SOUND LEVEL WITH CAB	dB(A)
Maximum Available Power—Two Hours	78.0
75% of Pull at Maximum Power—Ten Hours	78.0
50% of Pull at Maximum Power—Two Hours	77.0
50% of Pull at Reduced Engine Speed—Two Hours	73.0
Bystander in 15th (D3) gear	88.5

TIRES, BALLAST AND WEIGHT		Tested Without Ballast
Rear Tires	—No., size, ply & psi *(kPa)*	Four 24.5-32; 10; 12 *(85)*
Ballast	—Liquid (each)	None
	—Cast Iron (each)	None
Front Tires	—No., size, ply & psi *(kPa)*	Four 24.5-32; 10; 12 *(85)*
Ballast	—Liquid (each)	None
	—Cast Iron (each)	None
Height of Drawbar		17 in *(430 mm)*
Static Weight with Operator—Rear		15340 lb *(6958 kg)*
	—Front	22360 lb *(10143 kg)*
	—Total	37700 lb *(17101 kg)*

John Deere 8850 Diesel

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump return was maintained at 167°F *(74.9°C)*. Nine gears were chosen between 15% slip and 10 mph *(16.1 km/h)*.

We, the undersigned, certify that this is a true and correct report of official Tractor Test **1434**.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Robert W. Kleis, Acting Dean and Director

NEBRASKA TRACTOR TEST 1435 — JOHN DEERE 8650 DIESEL 16 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—993 rpm)								
238.56 *(177.89)*	2100	15.364 *(58.159)*	0.449 *(0.273)*	15.53 *(3.059)*	184 *(84.2)*	66 *(19.0)*	75 *(23.7)*	28.670 *(96.814)*
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
207.37 *(154.64)*	2148	13.876 *(52.526)*	0.466 *(0.283)*	14.95 *(2.944)*	180 *(82.2)*	66 *(18.9)*	76 *(24.4)*	....
0.00 *(0.00)*	2243	4.136 *(15.656)*	....	....	172 *(78.1)*	66 *(18.9)*	75 *(23.9)*	....
106.44 *(79.37)*	2200	8.960 *(33.917)*	0.586 *(0.357)*	11.88 *(2.340)*	178 *(81.4)*	66 *(19.2)*	76 *(24.4)*	....
239.17 *(178.35)*	2100	15.482 *(58.606)*	0.451 *(0.274)*	15.45 *(3.043)*	184 *(84.7)*	67 *(19.4)*	76 *(24.4)*	....
53.45 *(39.86)*	2220	6.591 *(24.950)*	0.859 *(0.523)*	8.11 *(1.597)*	174 *(78.9)*	66 *(18.9)*	76 *(24.4)*	....
157.41 *(117.38)*	2172	11.334 *(42.904)*	0.501 *(0.305)*	13.89 *(2.736)*	180 *(82.2)*	66 *(18.9)*	76 *(24.2)*	....
Av 127.30 **Av** *(94.93)*	2180	10.063 *(38.093)*	0.551 *(0.335)*	12.65 *(2.491)*	178 *(81.3)*	66 *(19.1)*	76 *(24.3)*	28.653 *(96.758)*

DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cool-ing med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 7th (C1) Gear											
219.93 *(164.00)*	14865 *(66.12)*	5.55 *(8.93)*	2100	3.41	15.419 *(58.366)*	0.488 *(0.297)*	14.26 *(2.810)*	182 *(83.1)*	57 *(13.9)*	63 *(16.9)*	28.925 *(97.675)*
75% of Pull at Maximum Power—Ten Hours 7th (C1) Gear											
170.50 *(127.14)*	11099 *(49.37)*	5.76 *(9.27)*	2164	2.60	12.898 *(48.826)*	0.527 *(0.320)*	13.22 *(2.604)*	180 *(82.3)*	54 *(12.1)*	55 *(12.7)*	28.777 *(97.176)*
50% of Pull at Maximum Power—Two Hours 7th (C1) Gear											
116.02 *(86.51)*	7402 *(32.93)*	5.88 *(9.46)*	2184	1.66	10.070 *(38.118)*	0.604 *(0.368)*	11.52 *(2.270)*	181 *(82.8)*	67 *(19.2)*	71 *(21.4)*	28.755 *(97.101)*
50% of Pull at Reduced Engine Speed—Two Hours 10th (D1) Gear											
116.21 *(86.66)*	7402 *(32.93)*	5.89 *(9.47)*	1330	1.49	8.562 *(32.410)*	0.513 *(0.312)*	13.57 *(2.674)*	182 *(83.1)*	68 *(20.0)*	74 *(23.1)*	28.735 *(97.034)*
MAXIMUM POWER IN SELECTED GEARS											
178.18 *(132.87)*	28257 *(125.69)*	2.36 *(3.81)*	2141	14.53	2nd (A2) Gear			181 *(82.8)*	50 *(10.0)*	52 *(11.1)*	28.920 *(97.659)*
217.28 *(162.03)*	21915 *(97.48)*	3.72 *(5.98)*	2101	5.37	3rd (A3) Gear			182 *(83.1)*	56 *(13.3)*	59 *(15.0)*	28.930 *(97.692)*
220.79 *(164.65)*	19847 *(88.28)*	4.17 *(6.71)*	2099	4.67	4th (B1) Gear			182 *(83.3)*	56 *(13.3)*	59 *(15.0)*	28.920 *(97.659)*
212.64 *(158.56)*	16909 *(75.21)*	4.72 *(7.59)*	2100	3.81	5th (A4) Gear			182 *(83.3)*	55 *(12.8)*	58 *(14.4)*	28.920 *(97.659)*
216.40 *(161.37)*	15387 *(68.44)*	5.27 *(8.49)*	2100	3.41	6th (B2) Gear			183 *(83.6)*	55 *(12.8)*	58 *(14.4)*	28.920 *(97.659)*
221.80 *(165.40)*	14982 *(66.64)*	5.55 *(8.93)*	2101	3.33	7th (C1) Gear			182 *(83.1)*	52 *(11.1)*	55 *(12.8)*	28.930 *(97.692)*
216.11 *(161.16)*	11612 *(51.65)*	6.98 *(11.23)*	2100	2.60	8th (C2) Gear			182 *(83.1)*	56 *(13.3)*	59 *(15.0)*	28.930 *(97.692)*
217.70 *(162.34)*	10574 *(47.04)*	7.72 *(12.42)*	2099	2.44	9th (B3) Gear			181 *(82.8)*	56 *(13.3)*	60 *(15.6)*	28.930 *(97.692)*
215.88 *(160.98)*	8881 *(39.50)*	9.12 *(14.67)*	2099	1.87	10th (D1) Gear			182 *(83.3)*	56 *(13.3)*	60 *(15.6)*	28.930 *(97.692)*

Department of Agricultural Engineering

Dates of Test: May 13-24, 1982

Manufacturer: JOHN DEERE TRACTOR WORKS, Waterloo, Iowa 50704

FUEL, OIL AND TIME: **Fuel** No. 2 Diesel **Cetane No.** 46.6 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60°** *(15°/15°)* 0.8364 **Fuel weight** 6.964 lbs/gal *(0.835 kg/l)* **Oil SAE** 15W40 **API service classification** CD CC SD **To motor** 6.098 gal *(23.082 l)* **Drained from motor** 5.379 gal *(20.360 l)* **Transmission and hydraulic lubricant** John Deere Hy-Gard transmission and hydraulic oil **Total time engine was operated** 36.0 hours.

ENGINE: **Make** John Deere Diesel **Type** six cylinder vertical with turbocharger and intercooler **Serial No.** 6619AR-11 044713RG **Crankshaft** lengthwise **Rated rpm** 2100 **Bore and stroke** 5.125" × 5.00" *(130.2 mm × 127.0 mm)* **Compression ratio** 15.2 to 1 **Displacement** 619 cu in *(10143 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements with aspirator **Oil filter** one full flow cartridge and one bypass cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** two paper elements **Muffler** vertical **Cooling medium temperature control** three thermostats.

CHASSIS: **Type** four wheel drive with duals **Serial No.** *RW8650H001584* **Tread width** rear 66" *(1680 mm)* to 129" *(3280 mm)* front 66" *(1680 mm)* to 129" *(3280 mm)* **Wheel base** 125" *(3175 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 66.0" *(1675 mm)* Vertical distance above roadway 41.3" *(1049 mm)* Horizontal distance from center of rear wheel tread 0.9" *(23 mm)* to the right **Hydraulic control system** direct engipe drive **Transmission** selective gear fixed ratio with partial (2) range operator controlled power shift **Advertised speeds mph** *(km/h)* first 2.1 *(3.4)* second 2.6 *(4.2)* third 3.8 *(6.1)* fourth 4.2 *(6.8)* fifth 4.7 *(7.6)* sixth 5.3 *(8.5)* seventh 5.5 *(8.9)* eighth 6.9 *(11.1)* ninth 7.6 *(12.2)* tenth 9.0 *(14.4)* eleventh 9.5 *(15.3)* twelfth 10.0 *(16.1)* thirteenth 11.2 *(18.0)* fourteenth 12.4 *(20.0)* fifteenth 16.2 *(26.0)* sixteenth 20.2 *(32.5)* reverse 4.1 *(6.6)*, 5.1 *(8.2)*, 8.2 *(13.3)*, 10.3 *(16.5)*, 10.9 *(17.5)*, 13.5 *(21.7)* **Clutch** wet multiple disc hydraulically power actuated and operated by foot pedal **Brakes** wet disc hydraulically power actuated and operated by foot pedal **Steering** hydrostatic and articulated **Turning radius** (on concrete surface without brake) right 245" *(6.22 m)* left 245" *(6.22 m)* **Turning space diameter** (on concrete surface without brake) right 499" *(12.67 m)* left 499" *(12.67 m)* **Power take-off** 993 rpm at 2100 engine rpm.

LUGGING ABILITY IN 7th (C1) GEAR

Crankshaft Speed rpm	2101	1891	1681	1471	1261	1051
Pull—lbs *(kN)*	14982 *(66.64)*	17105 *(76.09)*	18134 *(80.66)*	20056 *(89.21)*	20049 *(89.18)*	19036 *(84.68)*
Increase in Pull %	0	14	21	34	34	27
Power—Hp *(kW)*	221.80 *(165.40)*	226.39 *(168.82)*	212.93 *(158.78)*	204.86 *(152.76)*	175.43 *(130.82)*	139.28 *(103.86)*
Speed—Mph *(km/h)*	5.55 *(8.93)*	4.96 *(7.99)*	4.40 *(7.09)*	3.83 *(6.16)*	3.28 *(5.28)*	2.74 *(4.42)*
Slip %	3.33	3.81	4.12	4.75	4.75	4.44

TRACTOR SOUND LEVEL WITH CAB	dB(A)
Maximum Available Power—Two Hours	76.5
75% of Pull at Maximum Power—Ten Hours	76.5
50% of Pull at Maximum Power—Two Hours	76.5
50% of Pull at Reduced Engine Speed—Two Hours	73.0
Bystander in 15th (D3) gear	88.5

TIRES, BALLAST AND WEIGHT		Tested Without Ballast
Rear Tires	—No., size, ply & psi *(kPa)*	Four 23.1-34; 8; 12 *(85)*
Ballast	—Liquid (each)	None
	—Cast Iron (each)	None
Front Tires	—No., size, ply & psi *(kPa)*	Four 23.1-34; 8; 12 *(85)*
Ballast	—Liquid (each)	None
	—Cast Iron (each)	None
Height of Drawbar		17.5 in *(445 mm)*
Static Weight with Operator	—Rear	14310 lb *(6491 kg)*
	—Front	15960 lb *(7239 kg)*
	—Total	30270 lb *(13730 kg)*

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump return was maintained at 161°F *(71.9°C)*. Nine gears were chosen between 15% slip and 10 mph *(16.1 km/h)*.

We, the undersigned, certify that this is a true and correct report of official Tractor Test 1435.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

John Deere 8650 Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Robert W. Kleis, Acting Dean and Director

NEBRASKA TRACTOR TEST 1436 — JOHN DEERE 8450 DIESEL
16 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—993 rpm)								
186.98 (139.43)	2100	11.915 (45.103)	0.444 (0.270)	15.69 (3.091)	186 (85.5)	63 (17.3)	75 (23.9)	28.795 (97.231)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
161.70 (120.58)	2139	10.550 (39.936)	0.454 (0.276)	15.33 (3.019)	181 (82.8)	63 (17.2)	75 (23.9)	....
0.00 (0.00)	2239	3.063 (11.595)	....	....	174 (78.9)	63 (17.2)	76 (24.2)	....
82.93 (61.84)	2195	6.875 (26.025)	0.577 (0.351)	12.06 (2.376)	179 (81.7)	63 (17.2)	75 (23.9)	....
187.65 (139.93)	2100	11.984 (45.364)	0.445 (0.271)	15.66 (3.085)	186 (85.6)	64 (17.5)	76 (24.2)	....
41.80 (31.17)	2208	5.049 (19.113)	0.841 (0.512)	8.28 (1.631)	175 (79.4)	63 (17.2)	74 (23.3)	....
122.65 (91.46)	2163	8.698 (32.926)	0.494 (0.300)	14.10 (2.778)	181 (82.8)	63 (17.2)	74 (23.6)	....
Av 99.46 **Av (74.17)**	**2174**	**7.703** **(29.159)**	**0.539** **(0.328)**	**12.91** **(2.544)**	**179** **(81.8)**	**63** **(17.3)**	**75** **(23.8)**	**28.773** **(97.163)**

DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 7th (C1) Gear											
173.32 (129.39)	10904 (48.50)	5.97 (9.60)	2100	2.86	12.008 (45.456)	0.482 (0.293)	14.45 (2.847)	185 (84.7)	63 (17.2)	68 (19.7)	28.580 (96.510)
75% of Pull at Maximum Power—Ten Hours 7th (C1) Gear											
137.24 (102.34)	8325 (37.03)	6.18 (9.95)	2161	2.21	10.145 (38.403)	0.515 (0.313)	13.53 (2.665)	182 (83.1)	62 (16.7)	63 (16.9)	28.700 (96.916)
50% of Pull at Maximum Power—Two Hours 7th (C1) Gear											
93.34 (69.60)	5551 (24.69)	6.31 (10.15)	2190	1.56	8.023 (30.3[illegible]2)	0.599 (0.364)	11.63 (2.2[illegible]2)	181 (82.8)	61 (16.1)	62 (16.7)	28.905 (97.608)
50% of Pull at Reduced Engine Speed—Two Hours 10th (D1) Gear											
93.05 (69.39)	5552 (24.70)	6.29 (10.11)	1347	1.61	6.803 (25.752)	0.509 (0.310)	13.68 (2.695)	183 (83.9)	62 (16.4)	63 (16.9)	28.890 (97.557)
MAXIMUM POWER IN SELECTED GEARS											
142.38 (106.17)	26567 (118.18)	2.01 (3.23)	2128	14.90	1st (A1) Gear			183 (83.6)	59 (15.0)	61 (16.1)	28.550 (96.409)
163.32 (121.79)	22888 (101.81)	2.68 (4.31)	2099	7.89	2nd (A2) Gear			184 (84.4)	62 (16.7)	64 (17.8)	28.580 (96.510)
173.56 (129.42)	16221 (72.15)	4.01 (6.46)	2097	4.57	3rd (A3) Gear			185 (85.0)	61 (16.1)	63 (17.2)	28.580 (96.510)
175.73 (131.04)	14646 (65.15)	4.50 (7.24)	2099	3.93	4th (B1) Gear			185 (85.0)	61 (16.1)	63 (17.2)	28.570 (96.477)
170.45 (127.11)	12584 (55.98)	5.08 (8.17)	2101	3.36	5th (A4) Gear			185 (85.0)	61 (16.1)	63 (17.2)	28.570 (96.477)
172.49 (128.63)	11402 (50.72)	5.67 (9.13)	2100	3.03	6th (B2) Gear			185 (85.0)	60 (15.6)	62 (16.7)	28.570 (96.477)
175.02 (130.51)	10995 (48.91)	5.97 (9.61)	2101	3.03	7th (C1) Gear			185 (85.0)	60 (15.6)	62 (16.7)	28.570 (96.477)
170.66 (127.26)	8543 (38.00)	7.49 (12.06)	2098	2.28	8th (C2) Gear			185 (85.0)	62 (16.7)	64 (17.8)	28.580 (96.510)
170.60 (127.21)	7698 (34.24)	8.31 (13.38)	2101	1.86	9th (B3) Gear			184 (84.4)	62 (16.7)	65 (18.3)	28.580 (96.510)

Department of Agricultural Engineering

Dates of Test: May 12-27, 1982

Manufacturer: JOHN DEERE TRACTOR WORKS, Waterloo, Iowa 50704

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 46.6 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60°** *(15°/15°)* 0.8364 **Fuel weight** 6.964 lbs/gal *(0.835 kg/l)* **Oil SAE** 15W40 **API service classification** CD CC SD **To motor** 4.584 gal *(17.353 l)* **Drained from motor** 4.087 gal *(15.471 l)* **Transmission and final drive lubricant** John Deere Hy-Gard transmission and hydraulic oil **Total time engine was operated** 49.0 hours.

ENGINE: Make John Deere Diesel **Type** six cylinder vertical with turbocharger and intercooler **Serial No.** 6466AR-13 209127RG **Crankshaft** lengthwise **Rated rpm** 2100 **Bore and stroke** 4.5625" × 4.75" *(115.8 mm × 120.6 mm)* **Compression ratio** 15.5 to 1 **Displacement** 466 cu in *(7636 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements with aspirator **Oil filter** one full flow cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** two paper elements **Muffler** vertical **Cooling medium temperature control** two thermostats.

CHASSIS: Type four wheel drive with duals **Serial No.** *RW8450H 001185* **Tread width** rear 72" *(1820 mm)* to 129" *(3280 mm)* front 72" *(1820 mm)* to 129" *(3280 mm)* **Wheel base** 125" *(3175 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 64.0" *(1626 mm)* Vertical distance above roadway 41.3" *(1049 mm)* Horizontal distance from center of rear wheel tread 0.5" *(13 mm)* to the right **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (2) range operator controlled powershift **Advertised speeds mph *(km/h)*** first 2.3 *(3.7)* second 2.8 *(4.6)* third 4.1 *(6.6)* fourth 4.6 *(7.4)* fifth 5.2 *(8.3)* sixth 5.7 *(9.2)* seventh 6.0 *(9.7)* eighth 7.5 *(12.1)* ninth 8.3 *(13.4)* tenth 9.8 *(15.7)* eleventh 10.4 *(16.7)* twelfth 10.9 *(17.5)* thirteenth 12.2 *(19.6)* fourteenth 13.6 *(21.9)* fifteenth 17.6 *(28.4)* sixteenth 22.0 *(35.4)* reverse 4.5 *(7.2)*, 5.6 *(9.0)*, 9.0 *(14.5)*, 11.2 *(18.0)*, 11.8 *(19.0)*, 14.7 *(23.7)* **Clutch** wet multiple disc hydraulically power actuated and operated by foot pedal **Brakes** wet disc hydraulically power actuated and operated by foot pedal **Steering** hydrostatic and articulated **Turning radius** (on concrete surface without brake) right 243" *(6.17 m)* left 243" *(6.17 m)* **Turning space diameter** (on concrete surface without brake) right 495" *(12.57 m)* left 495" *(12.57 m)* **Power take-off** 993 rpm at 2100 engine rpm.

LUGGING ABILITY IN 7th (C1) GEAR

Crankshaft Speed rpm	2101	1888	1685	1465	1261	1041
Pull—lbs (kN)	10995 (48.91)	12467 (55.46)	13594 (60.47)	13950 (62.05)	13195 (58.69)	12004 (53.40)
Increase in Pull %	0	13	24	27	20	9
Power—Hp (kW)	175.02 (130.51)	177.70 (132.51)	172.34 (128.51)	153.50 (114.47)	125.18 (93.34)	94.36 (70.37)
Speed—Mph (km/h)	5.97 (9.61)	5.35 (8.60)	4.75 (7.65)	4.13 (6.64)	3.56 (5.73)	2.95 (4.74)
Slip %	3.03	3.36	3.52	3.68	3.52	3.36

TRACTOR SOUND LEVEL WITH CAB	dB(A)
Maximum Available Power—Two Hours	77.5
75% of Pull at Maximum Power—Ten Hours	77.0
50% of Pull at Maximum Power—Two Hours	76.0
50% of Pull at Reduced Engine Speed—Two Hours	73.0
Bystander in 15th (D3) gear	87.0

TIRES, BALLAST AND WEIGHT		Tested Without Ballast
Rear Tires	—No., size, ply & psi *(kPa)*	Four 20.8-38; 8; 12 *(85)*
Ballast	—Liquid (each)	None
	—Cast Iron (each)	None
Front Tires	—No., size, ply & psi *(kPa)*	Four 20.8-38; 8; 12 *(85)*
Ballast	—Liquid (each)	None
	—Cast Iron (each)	None
Height of Drawbar		17.5 in *(445 mm)*
Static Weight with Operator	—Rear	14230 lb *(64[illegible]5 kg)*
	—Front	14920 lb *(67[illegible]8 kg)*
	—Total	29150 lb *(132[illegible] kg)*

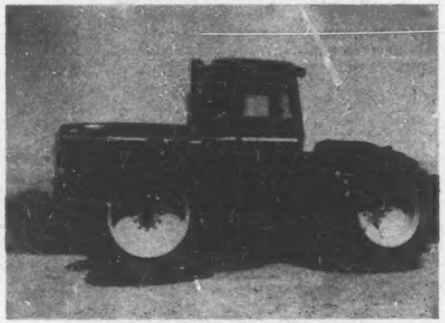
REPAIRS and ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump return was maintained at 150°F *(65.7°C)*. Nine gears were chosen between 15% slip and 10 mph *(16.1 km/h)*.

We, the undersigned, certify that this is a true and correct report of official Tractor Test **1436**.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers



John Deere 8450 Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Robert W. Kleis, Acting Dean and Director

NEBRASKA TRACTOR TEST 1437 — JOHN DEERE 1250 DIESEL 9 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—588 rpm)								
40.70 (30.35)	2500	2.439 (9.233)	0.417 (0.254)	16.69 (3.287)	189 (87.2)	64 (18.0)	76 (24.2)	28.820 (97.321)
Standard Power Take-off Speed (540 rpm)—One Hour								
40.98 (30.56)	2294	2.411 (9.127)	0.410 (0.249)	17.00 (3.348)	189 (87.4)	63 (17.4)	75 (23.8)	28.820 (97.321)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
35.57 (26.52)	2570	2.206 (8.351)	0.432 (0.263)	16.13 (3.176)	186 (85.3)	63 (17.2)	76 (24.2)	....
0.00 (0.00)	2650	0.732 (2.771)	....	....	182 (83.3)	64 (17.8)	76 (24.2)	....
17.95 (13.39)	2595	1.413 (5.349)	0.548 (0.334)	12.70 (2.503)	185 (85.0)	64 (17.8)	75 (23.9)	....
40.96 (30.54)	2500	2.434 (9.214)	0.414 (0.252)	16.83 (3.315)	188 (86.9)	64 (17.8)	76 (24.4)	....
9.06 (6.76)	2618	1.034 (3.914)	0.795 (0.483)	8.76 (1.727)	183 (83.9)	64 (17.8)	76 (24.4)	....
26.64 (19.87)	2566	1.783 (6.749)	0.466 (0.284)	14.94 (2.944)	185 (85.0)	64 (17.8)	76 (24.2)	....
Av 21.70 Av (16.18)	2583	1.600 (6.057)	0.514 (0.313)	13.56 (2.671)	185 (84.9)	64 (17.7)	76 (24.2)	28.817 (97.310)

DRAWBAR PERFORMANCE (Front Wheel Drive Disengaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cool-ing med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 6th (II-3) Gear											
33.44 (24.93)	2326 (10.35)	5.39 (8.68)	2499	6.29	2.405 (9.105)	0.501 (0.305)	13.90 (2.739)	190 (87.8)	66 (18.9)	76 (24.4)	28.705 (96.932)
75% of Pull at Maximum Power—Ten Hours 6th (II-3) Gear											
26.66 (19.88)	1775 (7.90)	5.63 (9.06)	2579	5.07	2.096 (7.936)	0.548 (0.333)	12.71 (2.505)	187 (86.0)	64 (18.0)	68 (19.9)	28.550 (96.679)
50% of Pull at Maximum Power—Two Hours 6th (II-3) Gear											
18.21 (13.58)	1183 (5.26)	5.77 (9.29)	2592	3.21	1.705 (6.455)	0.652 (0.397)	10.68 (2.104)	192 (88.6)	65 (18.3)	69 (20.3)	28.585 (96.797)
50% of Pull at Reduced Engine Speed—Two Hours 7th (III-1) Gear											
18.23 (13.59)	1185 (5.26)	5.78 (9.30)	1883	3.06	1.364 (5.164)	0.521 (0.317)	13.36 (2.632)	185 (84.7)	67 (19.2)	73 (22.5)	28.705 (96.932)

MAXIMUM POWER IN SELECTED GEARS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Gear	Cool-ing med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
25.86 (19.29)	3750 (16.68)	2.59 (4.16)	2581	14.63	4th (II-1) Gear	186 (85.3)	64 (17.8)	64 (17.8)	28.610 (96.612)
33.04 (24.64)	3221 (14.33)	3.85 (6.19)	2498	10.02	5th(II-2) Gear	189 (86.9)	62 (16.7)	66 (18.9)	28.680 (96.848)
34.01 (25.36)	2366 (10.52)	5.39 (8.68)	2497	6.15	6th (II-3) Gear	189 (86.9)	63 (17.2)	68 (20.0)	28.690 (96.882)
33.51 (24.99)	1654 (7.36)	7.60 (12.23)	2502	4.11	7th (III-1) Gear	188 (86.7)	63 (17.2)	69 (20.6)	28.700 (96.916)

LUGGING ABILITY IN 6th (II-3) GEAR

Crankshaft Speed rpm	2497	2253	1996	1751	1492	1242
Pull—lbs (kN)	2366 (10.52)	2640 (11.74)	2767 (12.31)	2838 (12.62)	2912 (12.95)	2902 (12.91)
Increase in Pull %	0	12	17	20	23	23
Power—Hp (kW)	34.01 (25.36)	33.87 (25.26)	31.25 (23.31)	28.05 (20.92)	24.39 (18.19)	20.24 (15.10)
Speed—Mph (km/h)	5.39 (8.68)	4.81 (7.74)	4.24 (6.82)	3.71 (5.97)	3.14 (5.06)	2.61 (4.21)
Slip %	6.15	7.27	7.82	7.98	8.58	8.48

Department of Agricultural Engineering

Dates of Test: May 13 to June 1, 1982

Manufacturer: YANMAR DIESEL ENGINE COMPANY LTD., Osaka, Japan

FUEL, OIL AND TIME: **Fuel** No. 2 Diesel **Cetane No.** 46.6 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60°** *(15°/15°)* 0.8364 **Fuel weight** 6.964 lbs/gal *(0.835 kg/l)* **Oil SAE** 15W40 **API service classification** CD CC SD **To motor** 2.264 gal *(8.569 l)* **Drained from motor** 2.042 gal *(7.731 l)* **Transmission and hydraulic lubricant**John Deere Hy Gard transmission and hydraulic oil **Front axle lubricant** SAE 90 **Total time engine was operated** 42.5 hours.

ENGINE: **Make** Yanmar Diesel **Type** three cylinder vertical **Serial No.** 3T95J-00162 **Crankshaft** lengthwise **Rated rpm** 2500 **Bore and stroke** 3.74" × 4.33" *(95 mm × 110 mm)* **Compression ratio** 16.4 to 1 **Displacement** 143 cu in *(2339 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements **Oil filter** one full flow cartridge **Fuel filter** one paper cartridge and one mesh strainer **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: **Type** front wheel assist **Serial No.** 1250 A 001080 CH **Tread width** rear 51.1" *(1300 mm)* to 78.7" *(2000 mm)* front 55.1" *(1400 mm)* to 74.8" *(1900 mm)* **Wheel base** 78.1" *(1983 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 35.0" *(888 mm)* Vertical distance above roadway 27.1" *(688 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph** *(km/h)* first 1.2 *(2.0)* second 1.8 *(2.9)* third 2.4 *(3.9)* fourth 2.9 *(4.7)* fifth 4.3 *(6.9)* sixth 5.7 *(9.2)* seventh 7.9 *(12.6)* eighth 11.5 *(18.4)* ninth 15.4 *(24.8)* reverse 1.9 *(3.0)*, 4.3 *(6.9)* **Clutch** single plate dry disc operated by foot pedal **Brakes** wet disc hydraulically operated by two foot pedals which can be locked together **Steering** power assist **Turning radius** (on concrete surface with brake applied) right 122" *(3.1 m)* left 122" *(3.1 m)* (on concrete surface without brake) right 142" *(3.6 m)* left 142" *(3.6 m)* **Turning space diameter** (on concrete surface with brake applied) right 254" *(6.44 m)* left 254" *(6.44 m)* (on concrete surface without brake) right 293" *(7.44 m)* left 293" *(7.44 m)* **Power take-off** 540 rpm at 2294 engine rpm.

REPAIRS and ADJUSTMENTS: The throttle lever friction disc was tightened after the 10 hour drawbar test.

TRACTOR SOUND LEVEL WITHOUT CAB	dB(A)	Front Wheel Drive Disengaged dB(A)
Maximum Available Power—Two Hours	95.5	95.5
75% of Pull at Maximum Power—Ten Hours		94.5
50% of Pull at Maximum Power—Two Hours		94.0
50% of Pull at Reduced Engine Speed—Two Hours		91.5
Bystander in 9th (III-3) gear		85.5

DRAWBAR PERFORMANCE (Front Wheel Drive Engaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cool-ing med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 6th (II-3) Gear											
33.36 (24.88)	2232 (9.93)	5.61 (9.02)	2499	4.23	2.441 (9.241)	0.510 (0.310)	13.67 (2.692)	189 (87.2)	67 (19.4)	79 (25.8)	28.685 (96.865)

MAXIMUM POWER IN SELECTED GEARS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Gear	Cool-ing med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
30.16 (22.49)	5164 (22.97)	2.19 (3.52)	2555	14.68	3rd (I-3) Gear	188 (86.4)	64 (17.8)	65 (18.3)	28.620 (96.645)
33.62 (25.07)	4749 (21.12)	2.65 (4.27)	2500	11.14	4th (II-1) Gear	188 (86.7)	64 (17.8)	66 (18.9)	28.640 (96.713)
34.09 (25.42)	3128 (13.91)	4.09 (6.58)	2500	6.21	5th (II-2) Gear	189 (86.9)	61 (16.1)	65 (18.3)	28.680 (96.848)
33.85 (25.24)	2263 (10.07)	5.61 (9.03)	2500	4.32	6th (II-3) Gear	189 (86.9)	67 (19.4)	78 (25.6)	28.690 (96.882)
33.14 (24.71)	1585 (7.05)	7.84 (12.62)	2502	2.79	7th (III-1) Gear	189 (86.9)	63 (17.2)	69 (20.6)	28.710 (96.949)

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi *(kPa)*	Two 14.9-28; 6; 14 *(95)*	Two 14.9-28; 6; 14 *(95)*
Ballast	—Liquid (each)	None	None
	—Test Equip. (each)	27 lb *(12 kg)*	None
Front Tires	—No., size, ply & psi *(kPa)*	Two 9.5-24; 4; 16 *(110)*	Two 9.5-24; 4; 16 *(110)*
Ballast	—Liquid (each)	None	None
	—Test Equip. (each)	18 lb *(8 kg)*	None
Height of Drawbar		17 in *(430 mm)*	17 in *(430 mm)*
Static Weight with Operator—Rear		2955 lb *(1340 kg)*	2900 lb *(1316 kg)*
—Front		2225 lb *(1009 kg)*	2190 lb *(993 kg)*
—Total		5180 lb *(2349 kg)*	5090 lb *(2309 kg)*

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump return was maintained at 136°F *(57.6°C)*. Five gears were chosen between 15% slip and 10 mph *(16.1 km/h)*.

We, the undersigned, certify that this is a true and correct report of official Tractor Test 1437.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

John Deere 1250 Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska-Lincoln
Robert W. Klein, Acting Dean and Director

NEBRASKA TRACTOR TEST 1438 — INTERNATIONAL 3288 DIESEL 16 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1159 rpm)								
90.46 (67.46)	2400	6.065 (22.959)	0.467 (0.284)	14.92 (2.938)	187 (85.9)	58 (14.4)	75 (23.8)	29.073 (98.176)
Standard Power Take-off Speed (1000 rpm)—One Hour								
86.33 (63.87)	2071	5.540 (20.971)	0.457 (0.266)	15.94 (3.141)	190 (87.7)	57 (14.1)	76 (24.2)	29.060 (98.131)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
81.08 (60.46)	2528	5.645 (21.369)	0.485 (0.295)	14.36 (2.829)	184 (84.2)	58 (14.2)	76 (24.4)	......
0.00 (0.00)	2670	2.207 (8.354)	.....	.....	175 (79.4)	57 (13.9)	76 (24.2)	......
41.48 (30.93)	2596	3.760 (14.233)	0.632 (0.385)	11.03 (2.173)	180 (82.2)	58 (14.4)	76 (24.4)	......
90.79 (67.70)	2400	6.088 (23.046)	0.468 (0.284)	14.91 (2.938)	187 (86.1)	57 (13.9)	76 (24.2)	......
21.33 (15.91)	2650	2.994 (11.334)	0.979 (0.595)	7.12 (1.404)	176 (80.3)	57 (13.9)	76 (24.2)	......
61.68 (45.99)	2567	4.664 (17.655)	0.527 (0.321)	13.23 (2.603)	182 (83.3)	58 (14.2)	78 (25.3)	......
Av 49.39 Av (36.83)	2560	4.226 (15.997)	0.597 (0.363)	11.69 (2.303)	181 (82.4)	57 (14.1)	76 (24.4)	29.040 (98.064)

DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption			Temp. °F (°C)			Barom. inch Hg (kPa)
					gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Cooling med	Air wet bulb	Air dry bulb	
Maximum Available Power—Two Hours 8th (H1) Gear											
79.71 (59.44)	5792 (25.76)	5.16 (8.31)	2401	4.36	6.059 (22.935)	0.530 (0.322)	13.16 (2.591)	189 (87.2)	63 (17.2)	79 (26.1)	28.910 (97.625)
75% of Pull at Maximum Power—Ten Hours 8th (H1) Gear											
64.36 (47.99)	4391 (19.53)	5.50 (8.85)	2529	3.37	5.227 (19.788)	0.566 (0.345)	12.31 (2.425)	182 (83.1)	63 (17.4)	66 (18.7)	28.699 (96.912)
50% of Pull at Maximum Power—Two Hours 8th (H1) Gear											
43.83 (32.69)	2928 (13.02)	5.61 (9.03)	2554	2.22	4.266 (16.150)	0.679 (0.413)	10.27 (2.024)	179 (81.7)	55 (12.5)	61 (15.8)	28.905 (97.608)
50% of Pull at Reduced Engine Speed—Two Hours 12th (H4) Gear											
43.90 (32.74)	2928 (13.02)	5.62 (9.05)	1696	2.26	3.209 (12.147)	0.510 (0.310)	13.68 (2.695)	180 (82.2)	56 (13.1)	64 (17.5)	28.955 (97.777)
MAXIMUM POWER IN SELECTED GEARS											
66.08 (49.27)	11486 (51.09)	2.16 (3.47)	2518	14.79	4th (L4) Gear			182 (83.3)	54 (12.2)	59 (15.0)	28.880 (97.523)
77.61 (57.87)	8853 (39.38)	3.29 (5.29)	2401	7.86	5th (L5) Gear			185 (84.7)	62 (16.7)	77 (25.0)	28.970 (97.827)
78.33 (58.41)	7460 (33.18)	3.94 (6.34)	2400	6.09	6th (L6) Gear			186 (85.6)	62 (16.7)	76 (24.4)	28.970 (97.827)
78.41 (58.47)	6512 (28.96)	4.52 (7.27)	2400	5.04	7th (L7) Gear			188 (86.4)	61 (16.1)	74 (23.3)	28.950 (97.760)
80.46 (60.00)	5855 (26.04)	5.15 (8.29)	2399	4.46	8th (H1) Gear			187 (86.1)	60 (15.6)	72 (22.2)	28.930 (97.692)
78.87 (58.81)	5523 (24.57)	5.36 (8.62)	2398	4.18	9th (L8) Gear			189 (87.2)	62 (16.7)	75 (23.9)	28.960 (97.794)
80.72 (60.19)	4952 (22.03)	6.11 (9.84)	2401	3.67	10th (H2) Gear			189 (87.2)	62 (16.7)	77 (25.0)	28.970 (97.827)
80.09 (59.72)	4320 (19.21)	6.95 (11.19)	2400	3.15	11th (H3) Gear			188 (86.4)	62 (16.7)	77 (25.0)	28.950 (97.760)
78.74 (58.71)	3593 (15.98)	8.22 (13.23)	2399	2.56	12th (H4) Gear			190 (87.8)	62 (16.7)	78 (25.6)	28.940 (97.726)

Department of Agricultural Engineering

Dates of Test: June 4-11, 1982

Manufacturer: INTERNATIONAL HARVESTER COMPANY, 401 North Michigan Avenue, Chicago, IL 60611

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 46.6 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60° (15°/15°)** 0.8375 **Fuel weight** 6.973 lbs/gal *(0.836 kg/l)* **Oil SAE** 30 **API service classification** CD/SE **To motor** 2.492 gal *(9.432 l)* **Drained from motor** 2.544 gal *(9.629 l)* **Transmission and final drive lubricant** I.H. Hytran fluid **Total time engine was operated** 38.5 hours.

ENGINE: Make International Diesel **Type** six cylinder vertical **Serial No.** 358DT2D110636* **Crankshaft** lengthwise **Rated rpm** 2400 **Bore and stroke** 3.875" × 5.062" *(98.4 mm × 128.6 mm)* **Compression ratio** 14.8 to 1 **Displacement** 358 cu in *(5866 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements with aspirator **Oil filter** one full flow cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** two paper cartridges **Muffler** underhood **Exhaust** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: Type standard with duals **Serial No.** 252000 2U001085* **Tread width** rear 66" *(1676 mm)* to 113.5" *(2883 mm)* front 60" *(1524 mm)* to 84" *(2134 mm)* **Wheel base** 104.8" *(2662 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 28.0" *(711 mm)* Vertical distance above roadway 38.3" *(973 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (2) range operator controlled powershift **Advertised speeds mph (km/h)** first 1.5 *(2.4)* second 1.8 *(2.9)* third 2.0 *(3.2)* fourth 2.4 *(3.8)* fifth 3.5 *(5.6)* sixth 4.1 *(6.6)* seventh 4.7 *(7.5)* eighth 5.3 *(8.5)* ninth 5.5 *(8.8)* tenth 6.2 *(10.0)* eleventh 7.0 *(11.3)* twelfth 8.3 *(13.3)* thirteenth 12.2 *(19.6)* fourteenth 14.3 *(23.1)* fifteenth 16.3 *(26.2)* sixteenth 19.1 *(30.8)* reverse 2.6 *(4.2)*, 3.1 *(4.9)*, 3.5 *(5.6)*, 4.1 *(6.5)* 6.0 *(9.7)* 7.0 *(11.3)* 8.0 *(12.9)* 9.4 *(15.1)* **Clutch** single dry disc hydraulically power actuated and operated by foot pedal **Brakes** wet multiple disc hydraulically power actuated and operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 142.8" *(3.63 m)* left 142.8" *(3.63 m)* (on concrete surface without brake) right 174.6" *(4.43 m)* left 174.6" *(4.43 m)* **Turning space diameter** (on concrete surface with brake applied) right 301.4" *(7.66 m)* left 301.4" *(7.66 m)* (on concrete surface without brake) right 365.2" *(9.28 m)* left 365.2" *(9.28 m)* **Power take-off** 540 rpm at 2106 engine rpm and 1000 rpm at 2071 engine rpm.

LUGGING ABILITY IN 8th (H1) GEAR

Crankshaft Speed rpm	2399	2161	1920	1681	1440	1202	957
Pull—lbs (kN)	5855 (26.04)	6400 (28.47)	6838 (30.42)	7111 (31.63)	7148 (31.80)	7199 (32.02)	7183 (31.95)
Increase in Pull %	0	9	17	21	22	23	23
Power—Hp (kW)	80.46 (60.00)	78.84 (58.79)	74.51 (55.56)	67.61 (50.41)	58.14 (43.35)	48.84 (36.42)	38.79 (28.92)
Speed—Mph (km/h)	5.15 (8.29)	4.62 (7.43)	4.09 (6.58)	3.57 (5.74)	3.05 (4.91)	2.54 (4.09)	2.03 (3.26)
Slip %	4.46	4.96	5.39	5.67	5.81	5.81	5.95

TRACTOR SOUND LEVEL WITH CAB	dB(A)
Maximum Available Power—Two Hours	79.0
75% of Pull at Maximum Power—Ten Hours	80.5
50% of Pull at Maximum Power—Two Hours	80.0
50% of Pull at Reduced Engine Speed—Two Hours	77.0
Bystander in 15th (H7) gear	86.5

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi (kPa)	Four 18.4-34; 6; 12 *(85)*	Four 18.4-34; 6; 12 *(85)*
Ballast	—Liquid (each inner)	568 lb *(258 kg)*	None
	—Test Equip (each)	100 lb *(45 kg)*	None
Front Tires	—No., size, ply & psi (kPa)	Two 9.5L-15; 6; 36 *(250)*	Two 9.5L-15; 6; 36 *(250)*
Ballast	—Test Equip (each)	87 lb *(40 kg)*	None
	—Cast Iron (each)	45 lb *(20 kg)*	None
Height of Drawbar		19 in *(485 mm)*	19 in *(485 mm)*
Static Weight with Operator	—Rear	10155 lb *(4606 kg)*	8620 lb *(3910 kg)*
	—Front	3405 lb *(1545 kg)*	3140 lb *(1424 kg)*
	—Total	13560 lb *(6151 kg)*	11760 lb *(5334 kg)*

International 3288 Diesel

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes or official Nebraska test procedure. During inspection light pitting on the exhaust valves of cylinders 5 and 6 was found. For the maximum power tests, the fuel temperature at the injection pump was maintained at 118°F *(47.8°C)*. Nine gears were chosen between 15% slip and 10 mph *(16.1 km/h)*.

We, the undersigned, certify that this is a true and correct report of official Tractor Test 1438.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
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Board of Tractor Test Engineers

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Robert W. Kleis, Acting Dean and Director

NEBRASKA TRACTOR TEST 1439 — INTERNATIONAL 3488 HYDRO DIESEL HYDROSTATIC

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1156 rpm)								
112.56 (83.94)	2400	7.971 (30.174)	0.494 (0.300)	14.12 (2.782)	196 (91.1)	59 (15.1)	75 (23.8)	29.030 (98.030)
Standard Power Take-off Speed (1000 rpm)—One Hour								
107.11 (79.87)	2072	7.008 (26.528)	0.456 (0.278)	15.28 (3.011)	197 (91.4)	59 (15.1)	75 (23.7)	29.050 (98.030)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
99.31 (74.06)	2490	7.348 (27.815)	0.516 (0.314)	13.51 (2.663)	192 (88.6)	60 (15.3)	75 (23.9)	....
0.00 (0.00)	2623	3.278 (12.409)	....	....	169 (76.1)	58 (14.7)	74 (23.6)	....
50.97 (38.01)	2562	5.195 (19.658)	0.710 (0.432)	9.82 (1.934)	178 (81.1)	59 (15.0)	75 (23.9)	....
113.18 (84.40)	2400	8.020 (30.359)	0.494 (0.301)	14.11 (2.780)	196 (90.8)	59 (15.0)	76 (24.4)	....
25.96 (19.37)	2598	4.229 (16.009)	1.155 (0.691)	6.14 (1.210)	176 (79.7)	58 (14.7)	74 (23.6)	....
75.62 (56.39)	2530	6.238 (23.613)	0.575 (0.350)	12.12 (2.388)	184 (84.2)	59 (15.0)	76 (24.2)	....
Av 60.84 Av (45.37)	2534	5.718 (21.645)	0.656 (0.399)	10.64 (2.096)	182 (83.4)	59 (14.9)	75 (23.9)	29.050 (98.098)

DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr [illegible] (kW.[illegible])	[illegible] °F (°C)	[illegible]	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours, Speed Setting [illegible] MPH Hi Range											
80.50 (60.03)	4848 (21.56)	6.23 (10.02)	2399	3.01	8.049 (30.468)	0.667 (0.424)	10.00 (1.970)	197 (91.4)	60 (15.6)	70 (21.1)	28.970 (97.827)
75% of Pull at Maximum Power—Ten Hours, Speed Setting—6.20 MPH Hi Range											
69.15 (51.56)	3761 (16.73)	6.89 (11.10)	2514	2.25	7.106 (26.899)	0.717 (0.436)	9.73 (1.917)	188 (86.7)	62 (16.7)	70 (20.9)	28.938 (97.719)
50% of Pull at Maximum Power—Two Hours, Speed Setting—6.20 MPH Hi Range											
50.15 (37.40)	2507 (11.15)	7.50 (12.07)	2558	1.45	5.952 (22.529)	0.827 (0.503)	8.43 (1.660)	183 (83.6)	61 (15.8)	74 (23.1)	28.960 (97.794)
50% of Pull at Reduced Engine Speed—Two Hours, Speed Setting—9.55 MPH Hi Range at 2400 Engine RPM											
50.17 (37.41)	2507 (11.15)	7.50 (12.08)	1720	1.41	5.127 (19.407)	0.713 (0.433)	9.79 (1.928)	198 (91.9)	62 (16.4)	76 (24.2)	28.915 (97.642)
MAXIMUM POWER AT SELECTED SPEEDS											
75.59 (56.37)	12152 (54.05)	2.33 (3.75)	2400	14.62	The infinitely		Lo R.	186 (85.7)	57 (13.9)	61 (16.1)	28.970 (97.827)
77.28 (57.63)	7130 (31.71)	4.06 (6.54)	2401	4.71	variable drive		Lo R.	202 (94.2)	59 (15.0)	77 (25.0)	29.040 (98.064)
75.66 (56.41)	6252 (27.81)	4.54 (7.30)	2400	4.02	control was		Lo R.	203 (94.7)	59 (15.0)	77 (25.0)	29.040 (98.064)
75.55 (56.34)	5663 (25.19)	5.00 (8.05)	2399	3.48	set to give		Lo R.	201 (93.6)	59 (15.2)	77 (25.0)	29.040 (98.064)
76.62 (57.14)	5242 (23.32)	5.48 (8.82)	2402	3.17	the travel		Hi R.	202 (94.4)	59 (15.0)	77 (25.0)	29.050 (98.097)
80.06 (59.70)	4977 (22.14)	6.03 (9.71)	2401	3.01	speeds shown		Hi R.	199 (92.8)	59 (15.0)	75 (23.9)	29.030 (98.097)
82.90 (61.82)	5014 (22.30)	6.20 (9.98)	2401	3.25			Hi R.	195 (90.6)	58 (14.4)	66 (18.9)	28.980 (97.861)
83.43 (62.21)	4815 (21.42)	6.50 (10.46)	2401	2.85			Hi R.	198 (92.2)	57 (13.9)	73 (22.8)	29.070 (98.165)
82.65 (61.63)	4367 (19.39)	7.11 (11.45)	2400	2.62			Hi R.	204 (95.6)	60 (15.6)	78 (25.6)	29.020 (97.996)
82.85 (61.78)	4130 (18.37)	7.52 (12.11)	2400	2.46			Hi R.	200 (93.3)	58 (14.4)	74 (23.3)	29.060 (98.131)
81.66 (60.89)	3745 (16.66)	8.18 (13.16)	2399	2.14			Hi R.	201 (93.9)	58 (14.4)	74 (23.3)	29.060 (98.131)

Department of Agricultural Engineering

Dates of Test: June 8-14, 1982

Manufacturer: INTERNATIONAL HARVESTER COMPANY, 401 North Michigan Avenue, Chicago, IL 60611

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 46.6 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60°** *(15°/15°)* 0.8375 **Fuel weight** 6.973 lbs/gal *(0.836 kg/l)* **Oil SAE 30 API service classification** CD/SE **To motor** 3.008 gal *(11.395 l)* **Drained from motor** 2.395 gal *(9.066 l)* **Transmission and final drive lubricant** I.H. Hytran fluid **Total time engine was operated** 51.0 hours.

ENGINE: Make International Diesel **Type** six cylinder vertical **Serial No.** 466DT2U055252* **Crankshaft** lengthwise **Rated rpm** 2400 **Bore and stroke** 4.30" × 5.35" *(109.2 mm × 135.9 mm)* **Compression ratio** 15.7 to 1 **Displacement** 466 cu in *(7636 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements with aspirator **Oil filter** two full flow cartridges **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** two paper cartridges **Muffler** underhood **Exhaust** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: Type standard with duals **Serial No.** 2560002U000698* **Tread width** rear 66" *(1680 mm)* to 114.5" *(2910 mm)* front 60" *(1524 mm)* to 84" *(2134 mm)* **Wheel base** 104.8" *(2662 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 28.0" *(711 mm)* Vertical distance above roadway 40.7" *(1034 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** infinitely variable hydrostatic using variable displacement pump and motor. A range transmission provides Hi and Lo range **Advertised speeds mph *(km/h)*** Lo Range—0 to 8.0 *(12.8)*; Hi Range—0 to 17.8 *(28.7)*; reverse Lo Range—0 to 3.0 *(4.8)*, Hi Range—0 to 7.4 *(11.9)* **Clutch** none-hydrostatic drive can be controlled by foot pedal **Brakes** wet multiple disc hydraulically power actuated and operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 141" *(3.58 m)* left 141" *(3.58 m)* (on concrete surface without brake) right 172" *(4.37 m)* left 172" *(4.37 m)* **Turning space diameter** (on concrete surface with brake applied) right 291" *(7.39 m)* left 291" *(7.39 m)* (on concrete surface without brake) right 354" *(8.99 m)* left 354" *(8.99 m)* **Power take-off** 540 rpm at 2106 engine rpm and 1000 rpm at 2072 engine rpm.

REPAIRS and ADJUSTMENTS: The fuel line to number two injector was replaced during preliminary PTO tests.

LUGGING ABILITY FROM SPEED SETTING—6.20 MPH Hi Range

Crankshaft Speed rpm	2401	2157	1921	1682	1439	1200
Pull—lbs (kN)	5014 (22.30)	5451 (24.25)	5662 (25.19)	5902 (26.25)	6126 (27.25)	5941 (26.43)
Increase in Pull %	0	9	13	18	22	18
Power—Hp (kW)	82.90 (61.82)	78.53 (58.56)	70.56 (52.62)	61.60 (45.94)	50.82 (37.90)	38.96 (29.05)
Speed—Mph (km/h)	6.20 (9.98)	5.40 (8.69)	4.67 (7.52)	3.91 (6.30)	3.11 (5.01)	2.46 (3.96)
Slip %	3.25	3.56	3.71	3.87	4.02	4.02

TRACTOR SOUND LEVEL WITH CAB	dB(A)
Maximum Available Power—Two Hours	83.5
75% of Pull at Maximum Power—Ten Hours	86.5
50% of Pull at Maximum Power—Two Hours	85.0
50% of Pull at Reduced Engine Speed—Two Hours	82.0
Bystander in Hi Range	89.5

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi *(kPa)*	Inner Two 18.4-38; 8; 12 *(85)* Outer Two 18.4-38; 6; 12 *(85)*	Inner Two 18.4-38; 8; 12 *(85)* Outer Two 18.4-38;6; 12 *(85)*
Ballast	—Liquid (each inner)	250 lb *(114 kg)*	None
	—Test Equip (each)	75 lb *(34 kg)*	None
Front Tires	—No., size, ply & psi *(kPa)*	Two 11L-15; 6; 32 *(220)*	Two 11L-15; 6; 32 *(220)*
Ballast	—Test Equip (each)	85 lb *(39 kg)*	None
	—Cast Iron (each)	45 lb *(20 kg)*	None
Height of Drawbar		21.5 in *(545 mm)*	21.5 in *(545 mm)*
Static Weight with Operator	—Rear	10160 lb *(4608 kg)*	9360 lb *(4245 kg)*
	—Front	3780 lb *(1715 kg)*	3520 lb *(1597 kg)*
	—Total	13940 lb *(6323 kg)*	12880 lb *(5842 kg)*

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump return was maintained at 175°F *(78.3°C)*. Eleven travel speeds were chosen between 15% slip and 10 mph *(16.1 km/h)*.

We, the undersigned, certify that this is a true and correct report of official Tractor Test **1439.**

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

International 3488 Hydro Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Robert W. Klein, Acting Dean and Director

NEBRASKA TRACTOR TEST 1440 — INTERNATIONAL 3688 DIESEL 16 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1150 rpm)								
113.72 (84.80)	2400	7.551 (28.580)	0.462 (0.281)	15.10 (2.973)	191 (88.4)	57 (13.9)	75 (24.0)	28.943 (97.737)
Standard Power Take-off Speed (1000 rpm)—One Hour								
112.48 (83.88)	2071	7.143 (27.039)	0.443 (0.269)	15.75 (3.102)	195 (90.3)	57 (13.8)	75 (23.8)	28.930 (97.692)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
99.71 (74.33)	2470	6.811 (25.782)	0.476 (0.290)	14.64 (2.884)	186 (85.5)	57 (13.9)	76 (24.2)	....
0.00 (0.00)	2610	2.715 (10.277)	....	....	169 (76.1)	56 (13.6)	74 (23.1)	....
51.42 (38.34)	2556	4.635 (17.621)	0.631 (0.384)	11.08 (2.176)	176 (79.7)	56 (13.6)	74 (23.6)	....
113.83 (84.88)	2401	7.551 (28.584)	0.463 (0.281)	15.08 (2.969)	190 (88.1)	57 (13.9)	74 (23.6)	....
26.16 (19.51)	2566	3.633 (13.684)	0.974 (0.592)	7.16 (1.411)	172 (77.5)	58 (14.4)	76 (24.7)	....
76.21 (56.83)	2521	5.696 (21.562)	0.521 (0.317)	13.38 (2.636)	180 (81.9)	58 (14.2)	76 (24.2)	....
Av 61.22 *Av* (45.65)	2525	5.100 (19.306)	0.580 (0.353)	11.82 (2.328)	179 (81.4)	57 (13.9)	75 (23.9)	28.890 (97.557)

DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 8th (H1) Gear											
99.21 (73.98)	6813 (30.31)	5.46 (8.79)	2400	4.81	7.457 (28.229)	0.524 (0.319)	13.30 (2.621)	183 (83.9)	51 (10.3)	59 (14.7)	28.930 (97.692)
75% of Pull at Maximum Power—Ten Hours 8th (H1) Gear											
78.92 (58.85)	5157 (22.94)	5.74 (9.24)	2491	3.55	6.393 (24.198)	0.565 (0.344)	12.35 (2.432)	180 (82.0)	57 (13.8)	62 (16.8)	28.887 (97.547)
50% of Pull at Maximum Power—Two Hours 8th (H1) Gear											
54.16 (40.39)	3438 (15.29)	5.91 (9.51)	2536	2.44	5.217 (19.747)	0.672 (0.409)	10.38 (2.045)	175 (79.4)	54 (11.9)	60 (15.3)	28.985 (97.878)
50% of Pull at Reduced Engine Speed—Two Hours 12th (H4) Gear											
54.20 (40.41)	3438 (15.29)	5.91 (9.51)	1622	2.44	3.818 (14.454)	0.491 (0.299)	14.19 (2.796)	177 (80.6)	56 (13.3)	64 (17.5)	28.985 (97.878)
MAXIMUM POWER IN SELECTED GEARS											
73.52 (54.82)	12250 (54.49)	2.25 (3.62)	2476	14.90		4th (L4) Gear		175 (79.4)	53 (11.7)	57 (13.9)	28.970 (97.827)
96.23 (71.76)	10391 (46.22)	3.47 (5.59)	2401	8.38		5th (L5) Gear		181 (82.5)	51 (10.6)	60 (15.6)	28.930 (97.692)
97.47 (72.68)	8766 (38.99)	4.17 (6.71)	2400	6.37		6th (L6) Gear		183 (83.6)	51 (10.6)	60 (15.6)	28.930 (97.692)
97.51 (72.72)	7648 (34.02)	4.78 (7.70)	2400	5.36		7th (L7) Gear		183 (83.9)	51 (10.6)	60 (15.6)	28.930 (97.692)
100.12 (74.66)	6876 (30.58)	5.46 (8.79)	2400	4.61		8th (H1) Gear		183 (83.6)	50 (10.0)	58 (14.4)	28.920 (97.659)
99.06 (73.87)	6552 (29.14)	5.67 (9.13)	2400	4.30		9th (L8) Gear		183 (83.9)	51 (10.6)	60 (15.6)	28.930 (97.692)
99.76 (74.39)	5778 (25.70)	6.47 (10.42)	2401	3.97		10th (H2) Gear		183 (83.6)	51 (10.6)	60 (15.6)	28.930 (97.692)
100.20 (74.70)	5111 (22.73)	7.35 (11.84)	2400	3.42		11th (H3) Gear		184 (84.2)	51 (10.6)	59 (15.0)	28.930 (97.692)
99.37 (74.10)	4281 (19.04)	8.70 (14.01)	2401	2.80		12th (H4) Gear		183 (83.9)	51 (10.6)	59 (15.0)	28.930 (97.692)

Department of Agricultural Engineering

Dates of Test: May 26 to June 7, 1982

Manufacturer: INTERNATIONAL HARVESTER COMPANY, 401 North Michigan Avenue, Chicago, IL 60611

FUEL, OIL AND TIME: **Fuel** No. 2 Diesel **Cetane No.** 46.6 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60°** *(15°/15°)* 0.8375 **Fuel weight** 6.973 lbs/gal *(0.836 kg/l)* **Oil SAE** 30 **API service classification** CD/SE **To motor** 2.722 gal *(10.302 l)* **Drained from motor** 2.129 gal *(8.058 l)* **Transmission and final drive lubricant** I.H. Hytran fluid **Total time engine was operated** 46.0 hours.

ENGINE: **Make** International Diesel **Type** six cylinder vertical **Serial No.** 436DT2U092915* **Crankshaft** lengthwise **Rated rpm** 2400 **Bore and stroke** 4.30" × 5.00" *(109.2 mm × 127 mm)* **Compression ratio** 16 to 1 **Displacement** 436 cu in *(7145 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements with aspirator **Oil filter** two full flow cartridges **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** two paper cartridges **Muffler** underhood **Exhaust** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: **Type** standard with duals **Serial No.** 2530002U001879* **Tread width** rear 66" *(1676 mm)* to 128.5" *(3264 mm)* front 60" *(1524 mm)* to 84" *(2134 mm)* **Wheel base** 104.8" *(2662 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 27.5" *(699 mm)* Vertical distance above roadway 40.5" *(1029 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (2) range operator controlled powershift **Advertised speeds mph** *(km/h)* first 1.6 *(2.6)* second 1.9 *(3.1)* third 2.2 *(3.5)* fourth 2.5 *(4.1)* fifth 3.7 *(6.0)* sixth 4.4 *(7.0)* seventh 5.0 *(8.0)* eighth 5.6 *(9.1)* ninth 5.8 *(9.4)* tenth 6.6 *(10.7)* eleventh 7.5 *(12.1)* twelfth 8.8 *(14.2)* thirteenth 13.0 *(20.9)* fourteenth 15.3 *(24.6)* fifteenth 17.4 *(28.0)* sixteenth 20.4 *(32.9)* reverse 2.8 *(4.5)*, 3.3 *(5.3)*, 3.7 *(5.9)*, 4.3 *(7.0)*, 6.4 *(10.3)*, 7.5 *(12.1)*, 8.5 *(13.7)*, 10.0 *(16.2)* **Clutch** single plate dry disc operated by foot pedal with hydraulic power assist **Brakes** wet multiple disc hydraulically power actuated and operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 141" *(3.58 m)* left 141" *(3.58 m)* (on concrete surface without brake) right 172" *(4.37 m)* left 172" *(4.37 m)* **Turning space diameter** (on concrete surface with brake applied) right 291" *(7.39 m)* left 291" *(7.39 m)* (on concrete surface without brake) right 354" *(8.99 m)* left 354" *(8.99 m)* **Power take-off** 540 rpm at 2106 engine rpm and 1000 rpm at 2071 engine rpm.

LUGGING ABILITY IN 8th (H1) GEAR

Crankshaft Speed rpm	2400	2161	1925	1679	1467	1197
Pull—lbs *(kN)*	6876 (30.58)	7736 (34.41)	8350 (37.14)	8708 (38.74)	8704 (38.72)	8463 (37.65)
Increase in Pull %	0	13	21	27	27	23
Power—Hp *(kW)*	100.12 (74.66)	100.73 (75.11)	96.32 (71.83)	87.28 (65.09)	75.14 (56.03)	60.56 (45.15)
Speed—Mph *(km/h)*	5.46 (8.79)	4.88 (7.86)	4.33 (6.96)	3.76 (6.05)	3.24 (5.21)	2.68 (4.32)
Slip %	4.61	5.41	5.86	6.30	6.45	6.30

TRACTOR SOUND LEVEL WITH CAB	dB(A)
Maximum Available Power—Two Hours	80.5
75% of Pull at Maximum Power—Ten Hours	82.5
50% of Pull at Maximum Power—Two Hours	80.5
50% of Pull at Reduced Engine Speed—Two Hours	77.0
Bystander in 15th (H7) gear	80.0

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi *(kPa)*	Inner Two 18.4-38; 6; 12 *(85)* Outer Two 18.4-38; 6; 12 *(85)*	Inner Two 18.4-38; 6; 12 *(85)* Outer Two 18.4-38; 6; 12 *(85)*
Ballast	—Liquid (each inner)	250 lb *(114 kg)*	None
	—Tire Equip. (each)	95 lb *(43 kg)*	None
Front Tires	—No., size, ply & psi *(kPa)*	Two 11L-15; 6; 32 *(220)*	Two 11L-15; 6; 32 *(220)*
Ballast	—Tire Equip (each)	82 lb *(37 kg)*	None
	—Cast Iron (each)	45 lb *(20 kg)*	None
Height of Drawbar		21.5 in *(545 mm)*	21.5 in *(545 mm)*
Static Weight with Operator—Rear		10810 lb *(4903 kg)*	9730 lb *(4414 kg)*
—Front		3725 lb *(1689 kg)*	3470 lb *(1574 kg)*
—Total		14535 lb *(6592 kg)*	13200 lb *(5988 kg)*

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes or official Nebraska test procedure. For the maximum power tests the fuel temperature at the injection pump was maintained at 125°F *(50.6°C)*. Nine gears were chosen between 15% slip and 10 mph *(16.1 km/h)*.

We, the undersigned, certify that this is a true and correct report of official Tractor Test 1440.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

International 3688 Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Robert W. Klein, Acting Dean and Director

NEBRASKA TRACTOR TEST 1441 — INTERNATIONAL 5488 DIESEL

18 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1005 rpm)								
187.22 (139.61)	2400	11.555 (43.740)	0.430 (0.262)	16.20 (3.192)	190 (87.7)	61 (15.9)	75 (23.9)	28.873 (97.501)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
165.46 (123.38)	2496	10.665 (40.371)	0.449 (0.273)	15.51 (3.056)	186 (85.6)	61 (16.1)	76 (24.4)	....
0.00 (0.00)	2614	3.446 (13.045)	....	....	176 (80.0)	60 (15.6)	74 (23.3)	....
84.88 (63.30)	2556	6.935 (26.252)	0.570 (0.347)	12.24 (2.411)	180 (82.2)	60 (15.6)	74 (23.3)	....
186.88 (139.36)	2400	11.517 (43.597)	0.430 (0.261)	16.23 (3.197)	189 (87.2)	60 (15.8)	75 (23.9)	....
42.84 (31.95)	2590	5.184 (19.6[illegible])	0.844 (0.513)	8.26 (1.628)	177 (80.6)	60 (15.6)	74 (23.6)	....
125.58 (93.64)	2524	8.841 (33.467)	0.491 (0.299)	14.20 (2.798)	183 (83.9)	61 (16.1)	75 (23.9)	....
Av 100.94 **Av** (75.27)	2530	7.765 (29.394)	0.536 (0.326)	13.00 (2.561)	182 (83.3)	60 (15.8)	75 (23.8)	28.897 (97.500)

DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 9th (M3) Gear											
163.44 (121.88)	11642 (51.78)	5.26 (8.47)	2399	3.69	11.545 (43.701)	0.493 (0.300)	14.16 (2.789)	187 (85.8)	55 (12.5)	67 (19.2)	28.915 (97.642)
75% of Pull at Maximum Power—Ten Hours 9th (M3) Gear											
130.87 (97.59)	8798 (39.14)	5.58 (8.98)	2512	2.57	9.949 (37.661)	0.530 (0.322)	13.15 (2.591)	182 (83.4)	56 (13.6)	66 (18.8)	28.951 (97.763)
50% of Pull at Maximum Power—Two Hours 9th (M3) Gear											
89.26 (66.56)	5866 (26.09)	5.71 (9.18)	2549	1.76	7.959 (30.129)	0.622 (0.378)	11.21 (2.209)	179 (81.7)	57 (13.9)	60 (15.6)	28.945 (97.743)
50% of Pull at Reduced Engine Speed—Two Hours 13th (H1) Gear											
89.32 (66.60)	5866 (26.09)	5.71 (9.19)	1530	1.58	6.023 (22.800)	0.470 (0.286)	14.83 (2.921)	181 (82.8)	59 (15.0)	64 (17.8)	28.893 (97.574)

MAXIMUM POWER IN SELECTED GEARS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %		Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
154.52 (115.23)	18646 (82.94)	3.11 (5.00)	2400	8.93	6th (L6) Gear	181 (82.5)	56 (13.3)	58 (14.4)	28.940 (97.726)
162.73 (121.35)	16001 (71.18)	3.81 (6.14)	2400	6.06	7th (M1) Gear	185 (85.0)	52 (11.1)	63 (17.2)	28.940 (97.726)
164.58 (122.73)	13535 (60.21)	4.56 (7.34)	2400	4.35	8th (M2) Gear	186 (85.3)	52 (11.1)	62 (16.7)	28.940 (97.726)
164.82 (122.91)	11731 (52.18)	5.27 (8.48)	2398	3.52	9th (M3) Gear	186 (85.6)	53 (11.7)	60 (15.6)	28.970 (97.827)
164.43 (122.61)	9879 (43.94)	6.24 (10.04)	2401	2.92	10th (M4) Gear	186 (85.6)	52 (11.1)	63 (17.2)	28.940 (97.726)
162.54 (121.21)	8373 (37.24)	7.28 (11.72)	2400	2.41	11th (M5) Gear	188 (86.4)	52 (11.1)	64 (17.8)	28.940 (97.726)
160.12 (119.40)	6987 (31.08)	8.59 (13.83)	2400	1.80	12th (M6) Gear	187 (86.1)	52 (11.1)	64 (17.8)	28.940 (97.726)

LUGGING ABILITY IN 9th (M3) GEAR

Crankshaft Speed rpm	2398	2102	1919	1662	1441	1204
Pull—lbs (kN)	11731 (52.18)	13488 (60.00)	14928 (66.40)	15838 (70.45)	15477 (68.85)	13385 (59.54)
Increase in Pull %	0	15	27	35	32	14
Power—Hp (kW)	164.82 (122.91)	169.56 (126.44)	165.14 (123.14)	152.46 (113.69)	127.90 (95.37)	93.55 (69.76)
Speed—Mph (km/h)	5.27 (8.48)	4.71 (7.58)	4.15 (6.68)	3.61 (5.81)	3.10 (4.99)	2.62 (4.22)
Slip %	3.52	4.36	5.18	5.66	5.50	4.52

Department of Agricultural Engineering

Dates of Test: May 26 to June 8, 1982

Manufacturer: INTERNATIONAL HARVESTER COMPANY, 401 North Michigan Avenue, Chicago, IL 60611

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 46.6 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60°** *(15°/15°)* 0.8375 **Fuel weight** 6.973 lbs/gal *(0.836 kg/l)* **Oil SAE** 30 **API service classification** CD/SE **To motor** 4.032 gal *(15.262 l)* **Drained from motor** 3.722 gal *(14.088 l)* **Transmission and final drive lubricant** I.H. Hy-tran fluid **Total time engine was operated** 38.5 hours.

ENGINE: Make International Diesel **Type** six cylinder vertical with turbocharger and intercooler **Serial No.** 467BT2U169510* **Crankshaft** lengthwise **Rated rpm** 2400 **Bore and stroke** 4.30" × 5.35" *(109.2 mm × 13[illegible] mm)* **Compression ratio** 16.3 to 1 **Displacement** 466 cu in *(7636 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements with aspirator **Oil filter** two full flow cartridges **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** two paper cartridges **Muffler** underhood **Exhaust** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: Type standard with duals **Serial No.** 2590002U001019* **Tread width** rear 64" *(1625 mm)* to 130" *(3302 mm)* front 62.5" *(1588 mm)* to 86.5" *(2197 mm)* **Wheel base** 111.6" *(2835 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 26.9" *(683 mm)* Vertical distance above roadway 38.9" *(988 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (2) range operator controlled powershift **Advertised speeds mph** *(km/h)* first 1.5 *(2.4)* second 1.8 *(2.8)* third 2.0 *(3.2)* fourth 2.4 *(3.8)* fifth 2.7 *(4.4)* sixth 3.2 *(5.2)* seventh 3.8 *(6.1)* eighth 4.5 *(7.2)* ninth 5.1 *(8.3)* tenth 6.0 *(9.7)* eleventh 7.0 *(11.3)* twelfth 8.2 *(13.3)* thirteenth 8.6 *(1[illegible].8)* fourteenth 10.1 *(16.2)* fifteenth 11.5 *(18.5)* sixteenth 13.6 *(21.8)* seventeenth 15.7 *(25.3)* eighteenth 18.5 *(29.7)* reverse 2.9 *(4.6)*, 3.4 *(5.4)*, 3.9 *(6.2)*, 4.5 *(7.3)*, 5.3 *(8.5)*, 6.2 *(9.9)* **Clutch** wet multiple disc operated by foot pedal with hydraulic power assist **Brakes** wet multiple disc hydraulically power actuated and operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 151.1" *(3.84 m)* left 151.1" *(3.84 m)* (on concrete surface without brake) right 199.5" *(5.07 m)* left 199.5" *(5.07 m)* **Turning space diameter** (on concrete surface with brake applied) right 316" *(8.03 m)* left 316" *(8.03 m)* (on concrete surface without brake) right 412" *(10.47 m)* left 412" *(10.47 m)* **Power take-off** 1005 rpm at 2400 engine rpm.

TRACTOR SOUND LEVEL WITH CAB	dB(A)
Maximum Available Power—Two Hours	78.0
75% of Pull at Maximum Power—Ten Hours	78.5
50% of Pull at Maximum Power—Two Hours	77.0
50% of Pull at Reduced Engine Speed—Two Hours	73.0
Bystander in 17th (H5) gear	86.5

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi (kPa)	Inner Two 20.8R38; 10; 12 *(85)* Outer Two 20.8R38; 8; 12 *(85)*	Inner Two 20.8R38; 10; 12 *(85)* Outer Two 20.8R38; 8; 12 *(85)*
Ballast	—Liquid (each inner)	995 lb *(452 kg)*	None
	—Tire Equip. (each)	100 lb *(49 kg)*	None
Front Tires	—No., size, ply & psi (kPa)	Two 14L-16.1; 6; 28 *(195)*	Two 14L-16.1; 6; 28 *(1[illegible]3)*
Ballast	—Tire Equip (each)	130 lb *(59 kg)*	None
	—Cast Iron (each)	40 lb *(18 kg)*	None
Height of Drawbar		21.5 in *(545 mm)*	21.5 in *(545 mm)*
Static Weight with Operator—Rear		15510 lb *(7035 kg)*	13085 lb *(5935 kg)*
—Front		4495 lb *(2039 kg)*	4155 lb *(1885 kg)*
—Total		20005 lb *(9074 kg)*	17240 lb *(7820 kg)*

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump was maintained at 128°F *(53.3°C)*. Seven gears were chosen between stability limit and 10 mph *(16.1 km/h)*.

We, the undersigned, certify that this is a true and correct report of official Tractor Test **1441**.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

International 5488 Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Robert W. Kleis, Acting Dean and Director

NEBRASKA TRACTOR TEST 1442 — YANMAR YM226D DIESEL
ALSO YANMAR YM226 DIESEL
9 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—583 rpm)								
19.42 *(14.48)*	2600	1.317 *(4.985)*	0.473 *(0.288)*	14.74 *(2.903)*	187 *(86.1)*	62 *(16.4)*	76 *(24.2)*	28.963 *(97.805)*
Standard Power Take-off Speed (540 rpm)—One Hour								
17.87 *(13.33)*	2409	1.186 *(4.489)*	0.468 *(0.282)*	15.07 *(2.969)*	193 *(89.4)*	61 *(16.1)*	75 *(24.1)*	28.945 *(97.743)*
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
16.88 *(12.59)*	2659	1.183 *(4.478)*	0.489 *(0.297)*	14.26 *(2.812)*	186 *(85.8)*	60 *(15.8)*	76 *(24.4)*	…… ……
0.00 *(0.00)*	2774	0.439 *(1.662)*	…… ……	…… ……	163 *(72.8)*	61 *(16.1)*	76 *(24.4)*	…… ……
8.63 *(6.44)*	2721	0.792 *(2.998)*	0.640 *(0.389)*	10.90 *(2.148)*	168 *(75.8)*	60 *(15.8)*	76 *(24.2)*	…… ……
19.50 *(14.54)*	2505	1.329 *(5.031)*	0.475 *(0.289)*	14.67 *(2.890)*	188 *(86.4)*	61 *(16.1)*	76 *(24.2)*	…… ……
4.36 *(3.25)*	2744	0.602 *(2.279)*	0.963 *(0.586)*	7.24 *(1.426)*	168 *(75.6)*	61 *(16.1)*	77 *(25.0)*	…… ……
12.81 *(9.55)*	2682	0.981 *(3.713)*	0.534 *(0.325)*	13.06 *(2.572)*	174 *(79.2)*	61 *(16.1)*	76 *(24.4)*	…… ……
Av 10.36 Av *(7.73)*	2681	0.888 *(3.361)*	0.597 *(0.363)*	11.67 *(2.300)*	173 *(78.3)*	61 *(16.0)*	76 *(24.4)*	28.910 *(97.629)*

DRAWBAR PERFORMANCE
(Front Wheel Drive Disengaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cool-ing med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 7th (3-1) Gear											
15.38 *(11.47)*	1205 *(5.36)*	4.79 *(7.71)*	2507	8.52	1.291 *(4.886)*	0.585 *(0.356)*	11.92 *(2.347)*	183 *(83.6)*	60 *(15.6)*	73 *(22.8)*	28.885 *(97.540)*
75% of Pull at Maximum Power—Ten Hours 7th (3-1) Gear											
12.62 *(9.41)*	953 *(4.24)*	4.97 *(7.99)*	2606	7.26	1.154 *(4.370)*	0.638 *(0.388)*	10.93 *(2.154)*	172 *(77.6)*	63 *(17.4)*	66 *(18.7)*	28.721 *(96.987)*
50% of Pull at Maximum Power—Two Hours 7th (3-1) Gear											
8.80 *(6.56)*	635 *(2.82)*	5.20 *(8.37)*	2707	4.71	0.950 *(3.596)*	0.753 *(0.458)*	9.26 *(1.824)*	169 *(76.1)*	65 *(18.3)*	68 *(20.0)*	28.750 *(97.084)*
50% of Pull at Reduced Engine Speed—Two Hours 8th (3-2) Gear											
8.80 *(6.56)*	634 *(2.82)*	5.20 *(8.38)*	1813	4.34	0.771 *(2.918)*	0.611 *(0.372)*	11.42 *(2.249)*	175 *(79.4)*	67 *(19.4)*	72 *(21.9)*	28.650 *(96.747)*

MAXIMUM POWER IN SELECTED GEARS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Gear	Cool-ing med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
12.29 *(9.16)*	2073 *(9.22)*	2.22 *(3.58)*	2659	14.87	5th (2-2) Gear	170 *(76.4)*	55 *(12.8)*	57 *(13.9)*	28.880 *(97.523)*
15.01 *(11.19)*	1821 *(8.10)*	3.09 *(4.97)*	2509	13.00	6th (2-3) Gear	172 *(77.5)*	57 *(13.9)*	61 *(16.1)*	28.870 *(97.490)*
16.14 *(12.04)*	1266 *(5.63)*	4.78 *(7.70)*	2598	8.89	7th (3-1) Gear	177 *(80.6)*	58 *(14.4)*	66 *(18.9)*	28.900 *(97.591)*
15.56 *(11.60)*	796 *(3.54)*	7.34 *(11.81)*	2596	5.88	8th (3-2) Gear	179 *(81.7)*	58 *(14.4)*	68 *(20.0)*	28.910 *(97.625)*

LUGGING ABILITY IN 7th (3-1) GEAR

Crankshaft Speed rpm	2598	2337	2087	1820	1547	1287
Pull—lbs *(kN)*	1266 *(5.63)*	1329 *(5.91)*	1450 *(6.45)*	1418 *(6.31)*	1349 *(6.00)*	1251 *(5.56)*
Increase in Pull %	0	5	15	12	7	−1
Power—Hp *(kW)*	16.14 *(12.04)*	15.18 *(11.32)*	14.66 *(10.93)*	12.48 *(9.31)*	10.14 *(7.56)*	7.88 *(5.88)*
Speed—Mph *(km/h)*	4.78 *(7.70)*	4.28 *(6.89)*	3.79 *(6.10)*	3.30 *(5.31)*	2.82 *(4.54)*	2.36 *(3.80)*
Slip %	8.89	9.03	9.93	10.10	9.80	9.03

Department of Agricultural Engineering

Dates of Test: June 10-21, 1982

Manufacturer: YANMAR DIESEL ENGINE CO., LTD, 1-32, Chayamachi, Kita-ku, Osaka, Japan

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 46.6 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60°** *(15°/15°)* 0.8375 **Fuel weight** 6.973 lbs/gal *(0.836 kg/l)* **Oil SAE** 30 **API service classification** SE/SF-CC/CD **To motor** 0.942 gal *(3.564 l)* **Drained from motor** 0.832 gal *(3.150 l)* **Transmission and hydraulic lubricant** J.D. 303 fluid or equivalent **Front axle lubricant** SAE 90 **Total time engine was operated** 43.5 hours.

ENGINE: Make Yanmar Diesel **Type** three cylinder vertical **Serial No.** 3T75H-00415 **Crankshaft** lengthwise **Rated rpm** 2600 **Bore and stroke** 2.95" × 3.35" *(75 mm × 85 mm)* **Compression ratio** 22.5 to 1 **Displacement** 68.7 cu in *(1126 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** one paper element with centrifugal precleaner **Oil filter** one full flow cartridge **Fuel filter** one paper element **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: Type front wheel assist **Serial No.** 226D-40458 **Tread width** rear 39.4" *(1000 mm)* to 47.4" *(1204 mm)* front 36.3" *(922 mm)* **Wheel base** 61.0" *(1550 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 26.1" *(664 mm)* Vertical distance above roadway 23.1" *(586 mm)* Horizontal distance from center of rear wheel tread 0.2" *(4 mm)* to the right **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (3) [illegible] operator controlled powershift **Adverti[illegible]ds mph** *(km/h)* first 0.8 *(1.2)* second 1.[illegible] third 1.6 *(2.6)* fourth 1.8 *(2.8)* fifth 2.6 *(4.2)* sixth 3.6 *(5.9)* seventh 5.4 *(8.7)* eighth 8.0 *(12.9)* ninth 11.2 *(18.0)* reverse 1.2 *(2.0)*, 2.8 *(4.5)* 8.6 *(13.8)* **Clutch** single plate dry disc operated by foot pedal **Brakes** drum and shoe operated by two foot pedals which can be locked together **Steering** mechanical **Turning radius** (on concrete surface with brake applied) right 91.3" *(2.32 m)* left 91.3" *(2.32 m)* (on concrete surface without brake) right 98.8" *(2.51 m)* left 98.8" *(2.51 m)* **Turning space diameter** (on concrete surface with brake applied) right 195" *(4.95 m)* left 195" *(4.95 m)* (on concrete surface without brake) right 210" *(5.33 m)* left 210" *(5.33 m)* **Power take-off** 540 rpm at 2409 engine rpm.

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

TRACTOR SOUND LEVEL WITHOUT CAB	dB(A)	Front Wheel Drive Disengaged dB (A)
Maximum Available Power—Two Hours	90.0	89.0
75% of Pull at Maximum Power—Ten Hours		89.0
50% of Pull at Maximum Power—Two Hours		87.5
50% of Pull at Reduced Engine Speed—Two Hours		84.0
Bystander in 9th (3-3) gear		75.5

DRAWBAR PERFORMANCE
(Front Wheel Drive Engaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cool-ing med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 7th (3-1) Gear											
15.13 *(11.29)*	1140 *(5.07)*	4.98 *(8.02)*	2600	6.19	1.273 *(4.818)*	0.586 *(0.357)*	11.89 *(2.342)*	185 *(84.7)*	62 *(16.4)*	75 *(23.9)*	28.860 *(97.456)*

MAXIMUM POWER IN SELECTED GEARS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Gear	Cool-ing med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
10.83 *(8.07)*	2644 *(11.76)*	1.54 *(2.47)*	2696	14.77	4th (2-1) Gear	168 *(75.3)*	52 *(11.1)*	53 *(11.7)*	28.880 *(97.523)*
16.21 *(12.09)*	1225 *(5.45)*	4.96 *(7.99)*	2598	6.40	7th (3-1) Gear	178 *(80.8)*	58 *(14.4)*	65 *(18.3)*	28.900 *(97.591)*

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi *(kPa)*	Two 9.5-24; 4; 14 *(95)*	Two 9.5-24; 4; 14 *(95)*
Ballast	—Liquid (each)	158 lb *(71 kg)*	None
	—Cast Iron (each)	220 lb *(100 kg)*	None
Front Tires	—No., size, ply & psi *(kPa)*	Two 6-14; 4; 28 *(195)*	Two 6-14; 4; 28 *(195)*
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	162 lb *(74 kg)*	None
Height of Drawbar		12.5 in *(315 mm)*	12.5 in *(315 mm)*
Static Weight with Operator—Rear		2135 lb *(968 kg)*	1380 lb *(626 kg)*
	—Front	1245 lb *(565 kg)*	920 lb *(417 kg)*
	—Total	3380 lb *(1533 kg)*	2300 lb *(1043 kg)*

Yanmar YM226D Diesel

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes or official Nebraska test procedure. For the maximum power tests the fuel temperature at the injection pump was maintained at 144°F *(62.1°C)*. Four gears were chosen between 15% slip and 10 mph *(16.1 km/h)*..

We, the undersigned, certify that this is a true and correct report of official Tractor Test 1442.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Robert W. Kleis, Acting Dean and Director

NEBRASKA TRACTOR TEST 1443 — YANMAR YM276D DIESEL
ALSO YANMAR YM276 DIESEL
12 SPEED

POWER TAKE-OFF PERFORMANCE

	Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	Fuel Consumption lb/hp.hr (kg/kW.h)	Fuel Consumption Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Temperature °F (°C) Air wet bulb	Temperature °F (°C) Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION									
Rated Engine Speed—Two Hours (PTO Speed—622 rpm)									
	23.00 (17.15)	2600	1.664 (6.299)	0.504 (0.307)	13.82 (2.723)	195 (90.6)	64 (17.7)	75 (23.9)	28.903 (97.602)
Standard Power Take-off Speed (540 rpm)—One Hour									
	22.82 (17.02)	2258	1.590 (6.019)	0.486 (0.296)	14.35 (2.828)	203 (94.8)	63 (17.2)	74 (23.4)	28.905 (97.608)
VARYING POWER AND FUEL CONSUMPTION—Two Hours									
	19.96 (14.88)	2656	1.467 (5.553)	0.513 (0.312)	13.60 (2.680)	186 (85.5)	64 (17.5)	75 (23.9)	....
	0.00 (0.00)	2802	0.572 (2.165)	....	....	162 (72.2)	64 (17.5)	75 (23.9)	....
	10.27 (7.66)	2739	0.972 (3.679)	0.660 (0.402)	10.56 (2.080)	169 (76.1)	63 (17.2)	75 (23.9)	....
	23.28 (17.36)	2600	1.682 (6.367)	0.504 (0.307)	13.84 (2.727)	193 (89.4)	64 (17.5)	76 (24.4)	....
	5.20 (3.88)	2764	0.774 (2.930)	1.039 (0.632)	6.71 (1.324)	166 (74.2)	64 (17.5)	76 (24.7)	....
	15.19 (11.33)	2694	1.213 (4.592)	0.557 (0.339)	12.52 (2.467)	170 (76.7)	63 (17.2)	74 (23.6)	....
Av Av	12.32 (9.19)	2700	1.114 (4.217)	0.631 (0.384)	11.06 (2.179)	174 (79.0)	63 (17.4)	75 (24.1)	28.903 (97.602)

DRAWBAR PERFORMANCE
(Front Wheel Drive Disengaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	Fuel Consumption lb/hp.hr (kg/kW.h)	Fuel Consumption Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Temp. °F (°C) Air wet bulb	Temp. °F (°C) Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 10th (3-1) Gear											
17.68 (13.19)	1146 (5.10)	5.79 (9.32)	2599	7.24	1.595 (6.039)	0.629 (0.383)	11.08 (2.183)	193 (89.2)	64 (17.8)	82 (27.5)	28.865 (97.473)
75% of Pull at Maximum Power—Ten Hours 10th (3-1) Gear											
14.75 (11.00)	921 (4.10)	6.00 (9.66)	2645	5.38	1.395 (5.279)	0.659 (0.401)	10.57 (2.083)	175 (79.4)	61 (16.1)	76 (24.6)	28.950 (97.760)
50% of Pull at Maximum Power—Two Hours 10th (3-1) Gear											
10.21 (7.61)	615 (2.73)	6.23 (10.03)	2700	3.98	1.147 (4.343)	0.784 (0.477)	8.90 (1.753)	168 (75.6)	65 (18.3)	76 (24.2)	28.945 (97.743)
50% of Pull at Reduced Engine Speed—Two Hours 11th (3-2) Gear											
10.19 (7.60)	614 (2.73)	6.23 (10.03)	2035	3.65	0.986 (3.732)	0.675 (0.410)	10.34 (2.036)	169 (76.1)	68 (20.0)	78 (25.6)	28.955 (97.777)
MAXIMUM POWER IN SELECTED GEARS											
14.11 (10.52)	2412 (10.73)	2.19 (3.53)	2659	14.87	7th (2-1) Gear			169 (75.8)	57 (13.9)	64 (17.8)	28.960 (97.794)
16.98 (12.66)	2218 (9.87)	2.87 (4.62)	2599	13.88	8th (2-2) Gear			177 (80.3)	58 (14.4)	67 (19.4)	28.960 (97.794)
17.88 (13.34)	1711 (7.61)	3.92 (6.31)	2600	10.94	9th (2-3) Gear			190 (87.5)	63 (17.2)	78 (25.6)	28.870 (97.490)
18.93 (14.11)	1228 (5.46)	5.78 (9.30)	2600	7.30	10th (3-1) Gear			188 (86.4)	63 (17.2)	76 (24.4)	28.870 (97.490)
18.22 (13.59)	875 (3.89)	7.81 (12.57)	2599	5.35	11th (3-2) Gear			190 (87.8)	63 (17.2)	80 (26.7)	28.870 (97.490)

LUGGING ABILITY IN 10th (3-1) GEAR

Crankshaft Speed rpm	2600	2345	2084	1818	1560	1291
Pull—lbs (kN)	1228 (5.46)	1342 (5.97)	1418 (6.31)	1363 (6.06)	1347 (5.99)	1319 (5.87)
Increase in Pull %	0	9	15	11	10	7
Power—Hp (kW)	18.93 (14.11)	18.49 (13.78)	17.27 (12.88)	14.55 (10.85)	12.30 (9.17)	9.98 (7.44)
Speed—Mph (km/h)	5.78 (9.30)	5.17 (8.31)	4.57 (7.35)	4.00 (6.44)	3.42 (5.51)	2.84 (4.57)
Slip %	7.30	8.27	8.79	8.27	8.02	8.53

Department of Agricultural Engineering

Dates of Test: June 12-24, 1982

Manufacturer: YANMAR DIESEL ENGINE CO., LTD, 1-32, Chayamachi, Kita-ku, Osaka, Japan

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 46.6 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60°** *(15°/15°)* 0.8375 **Fuel weight** 6.973 lbs/gal *(0.836 kg/l)* **Oil SAE** 30 **API service classification** SE/SF-CC/CD **To motor** 1.036 gal *(3.921 l)* **Drained from motor** 0.893 gal *(3.380 l)* **Transmission and hydraulic lubricant** J.D. 303 fluid or equivalent **Front axle lubricant** SAE 90 **Total time engine was operated** 52.5 hours.

ENGINE: Make Yanmar Diesel **Type** three cylinder vertical **Serial No.** 3T84H-200347 **Crankshaft** lengthwise **Rated rpm** 2600 **Bore and stroke** 3.31" × 3.35" *(84 mm × 85 mm)* **Compression ratio** 20 to 1 **Displacement** 86.2 cu in *(1413 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** one paper element with centrifugal precleaner **Oil filter** one full flow cartridge **Fuel filter** one paper element **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: Type front wheel assist **Serial No.** 276D-40365 **Tread width** rear 43.1" *(1094 mm)* to 54.9" *(1394 mm)* front 39.4" *(1000 mm)* **Wheel base** 64.0" *(1625 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 26.6" *(675 mm)* Vertical distance above roadway 28.3" *(718 mm)* Horizontal distance from center of rear wheel tread 0.1" *(2.5 mm)* to the left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (3) range operator controlled powershift **Advertised speeds mph** *(km/h)* first 0.2 *(0.3)* second 0.2 *(0.4)* third 0.3 *(0.5)* fourth 0.8 *(1.3)* fifth 1.1 *(1.8)* sixth 1.4 *(2.3)* seventh 2.6 *(4.2)* eighth 3.5 *(5.6)* ninth 4.6 *(7.4)* tenth 6.5 *(10.5)* eleventh 8.6 *(13.9)* twelfth 11.4 *(18.4)* reverse 0.2 *(0.3)*, 1.1 *(1.7)* 3.4 *(5.5)* 8.4 *(13.5)* **Clutch** single plate dry disc operated by foot pedal **Brakes** drum and shoe operated by two foot pedals which can be locked together **Steering** mechanical **Turning radius** (on concrete surface with brake applied) right 93.7" *(2.38 m)* left 93.7" *(2.38 m)* (on concrete surface without brake) right 101.6" *(2.58 m)* left 101.6" *(2.58 m)* **Turning space diameter** (on concrete surface with brake applied) right 201" *(5.10 m)* left 201" *(5.10 m)* (on concrete surface without brake) right 216.5" *(5.50 m)* left 216.5" *(5.50 m)* **Power take-off** 540 rpm at 2258 engine rpm.

REPAIRS and ADJUSTMENTS: The air cleaner to manifold gasket was discovered to be missing during preliminary PTO tests. A new gasket was installed and test continued.

TRACTOR SOUND LEVEL WITHOUT CAB	dB(A)	Front Wheel Drive Disengaged dB (A)
Maximum Available Power—Two Hours	90.0	90.5
75% of Pull at Maximum Power—Ten Hours		90.0
50% of Pull at Maximum Power—Two Hours		92.0
50% of Pull at Reduced Engine Speed—Two Hours		90.0
Bystander in 12th (3-3) gear		77.0

DRAWBAR PERFORMANCE
(Front Wheel Drive Engaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	Fuel Consumption lb/hp.hr (kg/kW.h)	Fuel Consumption Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Temp. °F (°C) Air wet bulb	Temp. °F (°C) Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 10th (3-1) Gear											
16.84 (12.56)	1037 (4.61)	6.09 (9.81)	2600	4.66	1.595 (6.039)	0.661 (0.402)	10.56 (2.079)	192 (88.9)	66 (18.9)	84 (28.9)	28.820 (97.321)
MAXIMUM POWER IN SELECTED GEARS											
9.98 (7.44)	2973 (13.22)	1.26 (2.03)	2707	14.78	6th (1-3) Gear			168 (75.6)	60 (15.6)	71 (21.7)	28.950 (97.760)
18.07 (13.47)	1626 (7.23)	4.17 (6.71)	2600	7.51	9th (2-3) Gear			192 (88.9)	63 (17.2)	79 (26.1)	28.870 (97.490)
19.06 (14.21)	1181 (5.25)	6.05 (9.74)	2600	5.23	10th (3-1) Gear			189 (87.2)	63 (17.2)	75 (23.9)	28.870 (97.490)

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi *(kPa)*	Two 11.2-24; 4; 14 *(95)*	Two 11.2-24; 4; 14 *(95)*
Ballast	—Liquid (each)	152 lb *(69 kg)*	None
	—Cast Iron (each)	350 lb *(159 kg)*	None
Front Tires	—No., size, ply & psi *(kPa)*	Two 7-14; 4; 26 *(180)*	Two 7-14; 4; 26 *(180)*
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	200 lb *(91 kg)*	None
Height of Drawbar		13.5 in *(343 mm)*	13.5 in *(343 mm)*
Static Weight with Operator—Rear		2650 lb *(1202 kg)*	1645 lb *(746 kg)*
—Front		1460 lb *(662 kg)*	1060 lb *(481 kg)*
—Total		4110 lb *(1864 kg)*	2705 lb *(1227 kg)*

Yanmar YM276D Diesel

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump was maintained at 136°F *(57.7°C)*. Five gears were chosen between 15% slip and 10 mph *(16.1 km/h)*..

We, the undersigned, certify that this is a true and correct report of official Tractor Test **1443**.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Robert W. Klein, Acting Dean and Director

NEBRASKA TRACTOR TEST 1444 — YANMAR YM336D DIESEL
ALSO YANMAR YM336 DIESEL
12 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—622 rpm)								
26.98 (20.12)	2600	1.946 (7.366)	0.503 (0.306)	13.87 (2.731)	175 (79.2)	60 (15.8)	76 (24.6)	28.847 (97.411)
Standard Power Take-off Speed (540 rpm)—One Hour								
25.63 (19.11)	2257	1.797 (6.802)	0.480 (0.297)	14.27 (2.809)	180 (82.0)	60 (15.8)	76 (24.4)	28.810 (97.287)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
23.77 (17.73)	2697	1.747 (6.613)	0.512 (0.312)	13.61 (2.681)	164 (73.6)	60 (15.6)	76 (24.4)	....
0.00 (0.00)	2764	0.641 (2.426)	....	....	140 (60.3)	60 (15.3)	75 (23.9)	....
11.90 (8.94)	2720	1.093 (4.137)	0.636 (0.387)	10.97 (2.161)	148 (64.7)	60 (15.3)	74 (23.6)	....
27.53 (20.53)	2600	1.979 (7.491)	0.501 (0.305)	13.91 (2.741)	170 (76.4)	60 (15.6)	74 (23.6)	....
6.04 (4.50)	2736	0.865 (3.274)	0.998 (0.607)	6.99 (1.374)	145 (62.8)	60 (15.6)	75 (23.9)	....
17.91 (13.36)	2706	1.385 (5.243)	0.539 (0.328)	12.93 (2.548)	154 (67.8)	60 (15.6)	74 (23.6)	....
Av 14.54 Av (10.84)	2704	1.285 (4.864)	0.616 (0.375)	11.32 (2.229)	154 (67.6)	60 (15.4)	75 (23.8)	28.793 (97.231)

DRAWBAR PERFORMANCE
(Front Wheel Drive Disengaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 10th (4-1) Gear											
22.46 (16.75)	1341 (5.97)	6.28 (10.11)	2600	5.18	1.972 (7.464)	0.612 (0.372)	11.39 (2.244)	176 (79.7)	59 (14.7)	71 (21.7)	28.975 (97.844)
75% of Pull at Maximum Power—Ten Hours 10th (4-1) Gear											
18.19 (13.56)	1026 (4.56)	6.65 (10.70)	2715	3.79	1.707 (6.460)	0.654 (0.398)	10.66 (2.100)	163 (72.7)	61 (16.3)	66 (19.0)	28.891 (97.561)
50% of Pull at Maximum Power—Two Hours 10th (4-1) Gear											
12.45 (9.28)	684 (3.04)	6.83 (10.99)	2746	2.34	1.291 (4.886)	0.723 (0.440)	9.64 (1.900)	166 (74.2)	68 (19.7)	77 (25.0)	28.745 (97.068)
50% of Pull at Reduced Engine Speed—Two Hours 11th (4-2) Gear											
12.48 (9.31)	684 (3.04)	6.84 (11.01)	1990	2.26	1.094 (4.139)	0.611 (0.372)	11.41 (2.248)	167 (75.0)	68 (19.7)	79 (25.8)	28.740 (97.051)
MAXIMUM POWER IN SELECTED GEARS											
18.11 (13.51)	3086 (13.73)	2.20 (3.54)	2700	15.00	7th (3-1) Gear			150 (70.3)	53 (11.7)	60 (15.6)	28.990 (97.895)
21.98 (16.39)	2561 (11.39)	3.22 (5.18)	2599	11.24	8th (3-2) Gear			166 (74.4)	56 (13.3)	64 (17.8)	28.990 (97.895)
22.35 (16.67)	1973 (8.78)	4.25 (6.84)	2600	7.97	9th (3-3) Gear			174 (78.9)	57 (13.9)	67 (19.4)	28.990 (97.895)
23.00 (17.15)	1374 (6.11)	6.28 (10.10)	2601	5.26	10th (4-1) Gear			172 (77.8)	56 (13.3)	66 (18.9)	28.990 (97.895)
21.72 (16.20)	876 (3.89)	9.30 (14.97)	2600	3.37	11th (4-2) Gear			175 (79.2)	57 (13.9)	68 (20.0)	28.980 (97.861)

LUGGING ABILITY IN 10th (4-1) GEAR

Crankshaft Speed rpm	2601	2351	2079	1812	1561	1265
Pull—lbs (kN)	1374 (6.11)	1462 (6.50)	1559 (6.93)	1592 (7.08)	1620 (7.21)	1586 (7.05)
Increase in Pull %	0	6	13	16	18	15
Power—Hp (kW)	23.00 (17.15)	22.03 (16.43)	20.71 (15.44)	18.37 (13.70)	16.08 (11.99)	12.77 (9.52)
Speed—Mph (km/h)	6.28 (10.10)	5.65 (9.09)	4.98 (8.02)	4.33 (6.96)	3.72 (5.99)	3.02 (4.86)
Slip %	5.26	5.50	5.91	6.15	6.34	6.24

Department of Agricultural Engineering

Dates of Test: June 15-23, 1982

Manufacturer: YANMAR DIESEL ENGINE CO., LTD, 1-32, Chayamachi, Kita-ku, Osaka, Japan

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 46.6 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60°** *(15°/15°)* 0.8375 **Fuel weight** 6.973 lbs/gal *(0.836 kg/l)* **Oil SAE** 30 **API service classification** SE/SF-CC/CD **To motor** 1.517 gal *(5.741 l)* **Drained from motor** 1.247 gal *(4.722 l)* **Transmission and hydraulic lubricant** J.D. 303 fluid or equivalent **Front axle lubricant** SAE 90 **Total time engine was operated** 41.0 hours.

ENGINE: Make Yanmar Diesel **Type** three cylinder vertical **Serial No.** 3T84A-400377 **Crankshaft** lengthwise **Rated rpm** 2600 **Bore and stroke** 3.31" × 3.54" *(84 mm × 90 mm)* **Compression ratio** 21 to 1 **Displacement** 91.3 cu in *(1496 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** one paper element with centrifugal precleaner **Oil filter** one full flow cartridge **Fuel filter** one paper element **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: Type front wheel assist **Serial No.** 336D-40253 **Tread width** rear 45.3" *(1150 mm)* to 59.1" *(1500 mm)* front 44.9" *(1140 mm)* **Wheel base** 68.9" *(1750 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 28.6" *(726 mm)* Vertical distance above roadway 24.7" *(628 mm)* Horizontal distance from center of rear wheel tread 0.3" *(8.6 mm)* to the left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (3) range operator controlled powershift **Advertised speeds mph *(km/h)*** first 0.3 *(0.4)* second 0.4 *(0.6)* third 0.5 *(0.8)* fourth 1.0 *(1.6)* fifth 1.5 *(2.4)* sixth 1.9 *(3.0)* seventh 2.6 *(4.2)* eighth 3.8 *(6.0)* ninth 4.8 *(7.7)* tenth 6.9 *(11.0)* eleventh 10.0 *(16.1)* twelfth 12.7 *(20.4)* reverse 0.4 *(0.6)*, 1.4 *(2.2)* 3.6 *(5.7)* 9.4 *(15.2)* **Clutch** single plate dry disc operated by foot pedal **Brakes** drum and shoe operated by two foot pedals which can be locked together **Steering** power assist **Turning radius** (on concrete surface with brake applied) right 101" *(2.56 m)* left 101" *(2.56 m)* (on concrete surface without brake) right 109" *(2.76 m)* left 109" *(2.76 m)* **Turning space diameter** (on concrete surface with brake applied) right 216" *(5.49 m)* left 216" *(5.49 m)* (on concrete surface without brake) right 232" *(5.89 m)* left 232" *(5.89 m)* **Power take-off** 540 rpm at 2257 engine rpm.

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

TRACTOR SOUND LEVEL WITHOUT CAB	dB(A)	Front Wheel Drive Disengaged dB (A)
Maximum Available Power—Two Hours	90.0	89.5
75% of Pull at Maximum Power—Ten Hours		88.5
50% of Pull at Maximum Power—Two Hours		88.5
50% of Pull at Reduced Engine Speed—Two Hours		86.0
Bystander in 12th (4-3) gear		78.0

DRAWBAR PERFORMANCE
(Front Wheel Drive Engaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 10th (4-1) Gear											
21.42 (15.97)	1236 (5.50)	6.50 (10.46)	2600	3.56	1.936 (7.329)	0.630 (0.383)	11.06 (2.179)	178 (80.8)	61 (15.8)	75 (23.6)	28.935 (97.709)
MAXIMUM POWER IN SELECTED GEARS											
16.98 (12.66)	3911 (17.39)	1.63 (2.62)	2709	14.83	6th (2-3) Gear			151 (66.1)	52 (11.1)	55 (12.8)	28.990 (97.895)
22.05 (16.44)	1867 (8.30)	4.43 (7.13)	2600	5.64	9th (3-3) Gear			176 (80.0)	57 (13.9)	68 (20.0)	28.980 (97.861)
22.08 (16.47)	1279 (5.69)	6.48 (10.42)	2598	3.90	10th (4-1) Gear			170 (76.7)	56 (13.3)	65 (18.3)	28.990 (97.895)

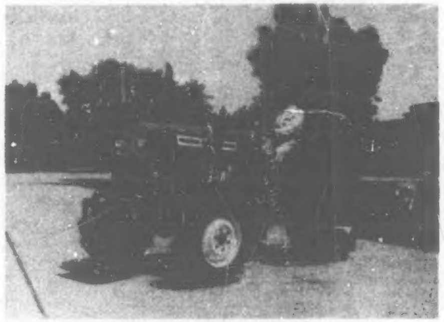
TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi *(kPa)*	Two 12.4/11-28; 4; 14 *(95)*	Two 12.4/11-28; 4; 14 *(95)*
Ballast	—Liquid (each)	293 lb *(133 kg)*	None
	—Cast Iron (each)	300 lb *(136 kg)*	None
Front Tires	—No., size, ply & psi *(kPa)*	Two 8-16; 6; 22 *(150)*	Two 8-16; 6; 22 *(150)*
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	215 lb *(97 kg)*	None
Height of Drawbar		16 in *(405 mm)*	16 in *(405 mm)*
Static Weight with Operator	—Rear	3235 lb *(1467 kg)*	2050 lb *(930 kg)*
	—Front	1785 lb *(810 kg)*	1355 lb *(615 kg)*
	—Total	5020 lb *(2277 kg)*	3405 lb *(1545 kg)*

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump was maintained at 149°F *(65.2°C)*. Five gears were chosen between 15% slip and 10 mph *(16.1 km/h)*. One scratch was found on the front cylinder wall during final inspection.

We, the undersigned, certify that this is a true and correct report of official Tractor Test **1444.**

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers



Yanmar YM336D Diesel

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Robert W. Kleis, Acting Dean and Director

NEBRASKA TRACTOR TEST 1445 — ALLIS CHALMERS 6140 DIESEL 10 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—594 rpm)								
41.08 (30.63)	2500	3.142 (11.894)	0.553 (0.324)	13.08 (2.575)	184 (84.6)	74 (23.2)	76 (24.2)	28.820 (97.321)
Standard Power Take-off Speed (541 rpm)—One Hour								
38.04 (28.37)	2277	2.825 (10.694)	0.518 (0.315)	13.47 (2.653)	181 (82.8)	73 (22.7)	75 (23.7)	28.830 (97.355)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
36.36 (27.11)	2602	2.882 (10.910)	0.553 (0.336)	12.62 (2.485)	175 (79.4)	72 (22.2)	74 (23.1)	....
0.00 (0.00)	2731	1.157 (4.380)	....	....	166 (74.4)	72 (22.2)	74 (23.3)	....
18.75 (13.98)	2682	1.923 (7.279)	0.715 (0.435)	9.75 (1.921)	170 (76.9)	72 (22.2)	75 (23.9)	....
40.28 (30.04)	2504	3.132 (11.856)	0.542 (0.330)	12.86 (2.534)	181 (82.8)	72 (22.2)	74 (23.6)	....
9.45 (7.05)	2708	1.531 (5.795)	1.130 (0.688)	6.17 (1.217)	166 (74.7)	72 (21.9)	75 (23.9)	....
27.69 (20.65)	2644	2.366 (8.956)	0.596 (0.363)	11.71 (2.306)	172 (77.8)	72 (22.2)	74 (23.6)	....
Av 22.09 Av (16.47)	2645	2.165 (8.195)	0.684 (0.416)	10.20 (2.010)	172 (77.7)	72 (22.3)	74 (23.6)	28.847 (97.411)

DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 7th (2H) Gear											
33.31 (24.84)	2402 (10.68)	5.20 (8.37)	2501	6.61	3.065 (11.602)	0.642 (0.390)	10.87 (2.141)	181 (82.8)	65 (18.3)	76 (24.2)	29.065 (98.148)
75% of Pull at Maximum Power—Ten Hours 7th (2H) Gear											
27.17 (20.26)	1838 (8.18)	5.54 (8.92)	2616	4.90	2.649 (10.028)	0.680 (0.414)	10.25 (2.020)	177 (80.4)	69 (20.5)	79 (25.9)	29.075 (98.182)
50% of Pull at Maximum Power—Two Hours 7th (2H) Gear											
18.79 (14.01)	1226 (5.45)	5.75 (9.25)	2668	3.34	2.115 (8.006)	0.785 (0.478)	8.88 (1.750)	174 (78.9)	68 (19.7)	81 (26.9)	29.060 (98.131)
50% of Pull at Reduced Engine Speed—Two Hours 8th (3H) Gear											
18.79 (14.01)	1226 (5.45)	5.75 (9.25)	2219	3.28	1.846 (6.988)	0.685 (0.417)	10.18 (2.005)	173 (78.3)	68 (20.0)	82 (27.5)	29.035 (98.047)
MAXIMUM POWER IN SELECTED GEARS											
22.54 (16.81)	4768 (21.21)	1.77 (2.85)	2643	14.85	4th (4L) Gear			170 (76.7)	63 (17.2)	65 (18.3)	29.000 (97.929)
32.30 (24.09)	4097 (18.22)	2.96 (4.76)	2498	12.34	5th (5L) Gear			179 (81.7)	64 (17.8)	72 (22.2)	29.060 (98.131)
33.00 (24.61)	3434 (15.27)	3.60 (5.80)	2500	9.62	6th (1H) Gear			178 (81.1)	64 (17.8)	71 (21.7)	29.050 (98.097)
33.97 (25.33)	2451 (10.90)	5.20 (8.36)	2500	6.61	7th (2H) Gear			175 (79.4)	62 (16.7)	66 (18.9)	29.010 (97.962)
33.84 (25.24)	2002 (8.90)	6.34 (10.20)	2502	5.35	8th (3H) Gear			177 (80.6)	63 (17.2)	69 (20.6)	29.030 (98.030)
32.22 (24.03)	1248 (5.55)	9.69 (15.59)	2500	3.46	9th (4H) Gear			177 (80.6)	63 (17.2)	70 (21.1)	29.040 (98.064)

Department of Agricultural Engineering

Dates of Test: August 30-September 8, 1982

Manufacturer: TOYOSHA COMPANY, LTD.,
55, Joshoji-16, Kadoma City, Osaka 571 Japan

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 46.6 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60°** *(15°/15°)* 0.8376 **Fuel weight** 6.974 lbs/gal *(0.836 kg/l)* **Oil SAE** 30 **API service classification** SE/SF-CC/CD **To motor** 1.845 gal *(6.984 l)* **Drained from motor** 1.427 gal *(5.402 l)* **Transmission and final drive lubricant** Allis Chalmers Power Fluid 821 **Total time engine was operated** 41.0 hours.

ENGINE: Make Toyosha Diesel **Type** three cylinder vertical **Serial No.** 3S233A00159 **Crankshaft** lengthwise **Rated rpm** 2500 **Bore and stroke** 3.858" × 4.055" *(98 mm × 103 mm)* **Compression ratio** 23 to 1 **Displacement** 142 cu in *(2330 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** one paper element **Oil filter** one full flow cartridge **Fuel filter** one paper element **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: Type standard **Serial No.** 6140-1084* **Tread width** rear 54" *(1372 mm)* to 84" *(2134 mm)* front 51.4" *(1305 mm)* to 74.7" *(1897 mm)* **Wheel base** 77.9" *(1980 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 27.7" *(703 mm)* Vertical distance above roadway 27.7" *(704 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph (km/h)** first 0.8 *(1.3)* second 1.1 *(1.9)* third 1.4 *(2.2)* fourth 2.0 *(3.3)* fifth 3.5 *(5.6)* sixth 4.1 *(6.6)* seventh 5.7 *(9.2)* eighth 6.9 *(11.1)* ninth 10.3 *(16.6)* tenth 17.7 *(28.5)* reverse 1.4 *(2.2)*, 7.1 *(11.4)* **Clutch** single dry disc operated by foot pedal **Brakes** wet disc operated by two foot pedals which can be locked together **Steering** power assist **Turning radius** (on concrete surface with brake applied) right 120" *(3.05 m)* left 121" *(3.07 m)* (on concrete surface without brake) right 137" *(3.48 m)* left 137" *(3.48 m)* **Turning space diameter** (on concrete surface with brake applied) right 255" *(6.48 m)* left 257" *(6.53 m)* (on concrete surface without brake) right 288" *(7.32 m)* left 288" *(7.32 m)* **Power take-off** 541 rpm at 2277 engine rpm.

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

LUGGING ABILITY IN 7th (2H) GEAR

Crankshaft Speed rpm	2500	2256	2003	1759	1512	1249
Pull—lbs (kN)	2451 (10.90)	2567 (11.42)	2722 (12.11)	2804 (12.47)	2753 (12.25)	2609 (11.61)
Increase in Pull %	0	5	11	14	12	6
Power—Hp (kW)	33.97 (25.33)	31.99 (23.85)	29.98 (22.35)	27.06 (20.18)	22.84 (17.03)	17.95 (13.38)
Speed—Mph (km/h)	5.20 (8.36)	4.67 (7.52)	4.13 (6.65)	3.62 (5.82)	3.11 (5.01)	2.58 (4.15)
Slip %	6.61	7.06	7.40	7.62	7.62	7.17

TRACTOR SOUND LEVEL WITHOUT CAB	dB(A)
Maximum Available Power—Two Hours	98.0
75% of Pull at Maximum Power—Ten Hours	96.0
50% of Pull at Maximum Power—Two Hours	95.5
50% of Pull at Reduced Engine Speed—Two Hours	94.0
Bystander in 10th (5H) gear	86.0

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi *(kPa)*	Two 14.9-28; 4; 14 *(95)*	Two 14.9-28; 4; 14 *(95)*
Ballast	—Liquid (each)	660 lb *(300 kg)*	None
	—Cast Iron (each)	158 lb *(72 kg)*	None
Front Tires	—No., size, ply & psi *(kPa)*	Two 7.50-16; 4; 32 *(220)*	Two 7.50-16; 4; 32 *(220)*
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	30 lb *(14 kg)*	None
Height of Drawbar		20 in *(510 mm)*	20 in *(510 mm)*
Static Weight with Operator—Rear		4610 lb *(2091 kg)*	2935 lb *(1331 kg)*
Front		1585 lb *(719 kg)*	1525 lb *(692 kg)*
Total		6195 lb *(2810 kg)*	4460 lb *(2023 kg)*

Allis Chalmers 6140 Diesel

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump return was maintained at 139°F *(59.4°C)*. Six gears were chosen between 15% slip and 10 mph *(16.1 km/h)*.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1445.**

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

**The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska-Lincoln
Irvin T. Omtvedt, Dean and Director**

NEBRASKA TRACTOR TEST 1446
ALLIS CHALMERS 8010 POWERSHIFT DIESEL
12 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1021 rpm)								
107.36 *(80.07)*	2300	7.261 *(27.486)*	0.472 *(0.287)*	14.79 *(2.913)*	186 *(85.6)*	68 *(19.7)*	75 *(23.7)*	28.920 *(97.659)*
Standard Power Take-off Speed (1000 rpm)—One Hour								
109.55 *(81.69)*	2252	7.297 *(27.622)*	0.465 *(0.283)*	15.01 *(2.957)*	186 *(85.6)*	64 *(17.9)*	77 *(24.8)*	29.020 *(97.996)*
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
95.80 *(71.44)*	2415	6.835 *(25.873)*	0.498 *(0.303)*	14.02 *(2.761)*	182 *(83.1)*	64 *(17.8)*	78 *(25.3)*	....
0.00 *(0.00)*	2540	2.615 *(9.899)*	....	....	171 *(77.2)*	64 *(17.8)*	78 *(25.3)*	....
49.27 *(36.74)*	2484	4.654 *(17.617)*	0.659 *(0.401)*	10.59 *(2.085)*	180 *(82.2)*	64 *(18.1)*	78 *(25.3)*	....
109.01 *(81.29)*	2301	7.235 *(27.387)*	0.463 *(0.282)*	15.07 *(2.968)*	186 *(85.6)*	64 *(17.5)*	79 *(26.1)*	....
24.92 *(18.58)*	2512	3.626 *(13.726)*	1.015 *(0.617)*	6.87 *(1.354)*	172 *(78.1)*	62 *(16.9)*	76 *(24.7)*	....
73.00 *(54.44)*	2452	5.670 *(21.463)*	0.542 *(0.330)*	12.88 *(2.536)*	182 *(83.1)*	64 *(17.5)*	75 *(23.9)*	....
Av 58.67 *Av (43.75)*	2451	5.108 *(19.338)*	0.607 *(0.369)*	11.49 *(2.264)*	179 *(81.6)*	64 *(17.6)*	77 *(25.1)*	29.002 *(98.131)*

DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cool-ing med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 7th (2F) Gear											
91.46 *(68.21)*	5559 *(24.73)*	6.17 *(9.93)*	2300	6.96	7.277 *(27.547)*	0.555 *(0.338)*	12.57 *(2.476)*	184 *(84.2)*	68 *(19.7)*	70 *(21.1)*	29.170 *(98.503)*
75% of Pull at Maximum Power—Ten Hours 7th (2F) Gear											
73.95 *(55.15)*	4163 *(18.52)*	6.66 *(10.72)*	2426	4.80	6.442 *(24.385)*	0.607 *(0.370)*	11.48 *(2.262)*	183 *(84.0)*	70 *(20.8)*	72 *(22.2)*	29.086 *(98.219)*
50% of Pull at Maximum Power—Two Hours 7th (2F) Gear											
50.97 *(38.01)*	2777 *(12.35)*	6.88 *(11.08)*	2465	3.20	5.341 *(20.219)*	0.731 *(0.445)*	9.54 *(1.880)*	185 *(84.7)*	74 *(23.1)*	82 *(27.8)*	28.975 *(97.844)*
50% of Pull at Reduced Engine Speed—Two Hours 9th (3F) Gear											
51.09 *(38.10)*	2777 *(12.35)*	6.90 *(11.10)*	1792	3.00	4.302 *(16.284)*	0.587 *(0.357)*	11.88 *(2.340)*	188 *(86.7)*	75 *(23.9)*	88 *(31.1)*	28.930 *(97.692)*
MAXIMUM POWER IN SELECTED GEARS											
73.67 *(54.94)*	9102 *(40.49)*	3.04 *(4.88)*	2421	14.81	3rd (3S) Gear			177 *(80.6)*	64 *(17.8)*	65 *(18.3)*	29.150 *(98.435)*
84.42 *(62.95)*	8624 *(38.36)*	3.67 *(5.91)*	2299	13.95	4th (4S) Gear			182 *(83.1)*	65 *(18.3)*	66 *(18.9)*	29.160 *(98.469)*
90.91 *(67.79)*	7984 *(35.51)*	4.27 *(6.87)*	2300	11.17	5th (1F) Gear			183 *(83.9)*	66 *(18.9)*	67 *(19.4)*	29.160 *(98.469)*
83.62 *(62.36)*	6476 *(28.81)*	4.84 *(7.79)*	2299	8.43	6th (5S) Gear			184 *(84.2)*	66 *(18.9)*	68 *(20.0)*	29.160 *(98.469)*
93.01 *(69.36)*	5658 *(25.17)*	6.16 *(9.92)*	2299	6.90	7th (2F) Gear			184 *(84.4)*	66 *(18.9)*	68 *(20.0)*	29.170 *(98.503)*
85.19 *(63.53)*	5103 *(22.70)*	6.26 *(10.08)*	2300	6.19	8th (6S) Gear			183 *(83.9)*	66 *(18.9)*	67 *(19.4)*	29.150 *(98.435)*
92.91 *(69.29)*	4004 *(17.81)*	8.70 *(14.01)*	2298	4.68	9th (3F) Gear			184 *(84.4)*	66 *(18.9)*	67 *(19.4)*	29.150 *(98.435)*

Department of Agricultural Engineering

Dates of Test: August 30-September 10, 1982

Manufacturer: ALLIS CHALMERS CORPORATION P.O. Box 512, Milwaukee, Wisconsin 53201

FUEL, OIL AND TIME: **Fuel** No. 2 Diesel **Cetane No.** 46.6 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60°** *(15°/15°)* 0.8376 **Fuel weight** 6.974 lbs/gal *(0.836 kg/l)* **Oil SAE** 15W-40 **API service classification** SF-CD **To motor** 3.140 gal *(11.888 l)* **Drained from motor** 2.872 gal *(10.870 l)* **Transmission and final drive lubricant** Allis Chalmers Power Fluid 821 **Total time engine was operated** 40.0 hours.

ENGINE: **Make** Allis Chalmers Diesel **Type** six cylinder vertical with turbocharger **Serial No.** 49-18702 **Crankshaft** lengthwise **Rated rpm** 2300 **Bore and stroke** 3.875" × 4.25" *(98.4 mm × 107.9 mm)* **Compression ratio** 15.5 to 1 **Displacement** 301 cu in *(4933 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements **Oil filter** two full flow paper cartridges **Oil cooler** engine coolant heat exchanger for crankcase oil, raditor for hydraulic and transmission oil **Fuel filter** two paper cartridges **Muffler** underhood **Exhaust** vertical **Cooling medium temperature control** two thermostats.

CHASSIS: **Type** standard **Serial No.** 8010S 1408 **Tread width** rear 59" *(1499 mm)* to 97" *(2463 mm)* front 60" *(1524 mm)* to 90" *(2286 mm)* **Wheel base** 106" *(2692 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 30.6" *(777 mm)* Vertical distance above roadway 40.4" *(1026 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (6) range operator controlled powershift **Advertised speeds mph (km/h)** first 1.8 *(2.9)* second 2.5 *(4.0)* third 3.5 *(5.6)* fourth 4.4 *(7.1)* fifth 4.9 *(7.9)* sixth 5.4 *(8.7)* seventh 6.8 *(11.0)* eighth 6.8 *(11.0)* ninth 9.3 *(15.0)* tenth 11.8 *(19.0)* eleventh 14.6 *(23.5)* twelfth 18.4 *(30.0)* reverse 2.9 *(4.7)*, 7.9 *(12.7)* **Clutch** multiple wet disc hydraulically power actuated and operated by foot pedal **Brakes** multiple wet disc hydraulically power actuated and operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 144.5" *(3.67 m)* left 145.5" *(3.70 m)* (on concrete surface without brake) right 166.2" *(4.22 m)* left 167.2" *(4.25 m)* **Turning space diameter** (on concrete surface with brake applied) right 312.5" *(7.94 m)* left 314.5" *(7.99 m)* (on concrete surface without brake) right 356.0" *(9.04 m)* left 358.0" *(9.09 m)* **Power take-off** 540 rpm at 2230 engine rpm and 1000 rpm at 2252 rpm.

LUGGING ABILITY IN 7th (2F) GEAR

Crankshaft Speed rpm	2299	2071	1847	1612	1383	1154
Pull—lbs *(kN)*	5658 *(25.17)*	6204 *(27.60)*	6394 *(28.44)*	6573 *(29.24)*	6271 *(27.89)*	5496 *(24.44)*
Increase in Pull %	0	11	13	16	11	-3
Power—Hp *(kW)*	93.01 *(69.36)*	91.83 *(68.48)*	83.36 *(62.16)*	74.48 *(55.54)*	61.22 *(45.65)*	45.32 *(33.79)*
Speed—Mph *(km/h)*	6.16 *(9.92)*	5.50 *(8.85)*	4.89 *(7.87)*	4.25 *(6.84)*	3.66 *(5.89)*	3.09 *(4.98)*
Slip %	6.90	7.93	8.22	8.50	8.08	7.07

TRACTOR SOUND LEVEL WITH CAB	dB(A)
Maximum Available Power—Two Hours	79.5
75% of Pull at Maximum Power—Ten Hours	79.0
50% of Pull at Maximum Power—Two Hours	77.5
50% of Pull at Reduced Engine Speed—Two Hours	75.0
Bystander in 12th (6F) gear	87.5

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi *(kPa)*	Two 18.4-38; 8; 18 *(125)*	Two 18.4-38; 8; 18 *(125)*
Ballast	—Liquid (each)	None	None
	—Tост Equip. (each)	170 lb *(81 kg)*	None
Front Tires	—No., size, ply & psi *(kPa)*	Two 10.00-16; 8; 44 (305)	Two 10.00-16; 8; 44 (305)
Ballast	—Liquid (each)	None	None
	—Tost Equip. (each)	100 lb *(45 kg)*	None
Height of Drawbar		20.5 in *(520 mm)*	20.5 in *(520 mm)*
Static Weight with Operator—Rear		9335 lb *(4234 kg)*	8980 lb *(4073 kg)*
Front		3850 lb *(1746 kg)*	3650 lb *(1656 kg)*
Total		13185 lb *(5980 kg)*	12630 lb *(5729 kg)*

Allis Chalmers 8010 Power Shift Diesel

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump return was maintained at 151°F *(66.1°C)*. Seven gears were chosen between 15% slip and 10 mph *(16.1 km/h)*.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. 1446.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Irwin T. Omtvedt, Dean and Director

NEBRASKA TRACTOR TEST 1447
ALLIS CHALMERS 8030 POWERSHIFT DIESEL
12 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1021 rpm)								
133.75 *(99.74)*	2500	8.882 *(33.622)*	0.468 *(0.285)*	15.06 *(2.967)*	188 *(86.7)*	66 *(18.8)*	75 *(23.9)*	29.030 *(98.030)*
Standard Power Take-off Speed (1000 rpm)—One Hour								
134.43 *(100.24)*	2252	8.814 *(33.363)*	0.457 *(0.278)*	15.25 *(3.004)*	190 *(87.8)*	66 *(18.9)*	75 *(23.9)*	29.025 *(98.013)*
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
119.84 *(89.36)*	2423	8.337 *(31.559)*	0.485 *(0.295)*	14.38 *(2.832)*	187 *(86.1)*	65 *(18.3)*	75 *(23.9)*	....
0.00 *(0.00)*	2583	3.037 *(11.496)*	....	....	171 *(77.3)*	66 *(18.9)*	78 *(25.3)*	....
61.84 *(46.11)*	2500	5.657 *(21.414)*	0.638 *(0.388)*	10.93 *(2.153)*	180 *(82.2)*	65 *(18.3)*	74 *(23.3)*	....
133.77 *(99.75)*	2500	8.857 *(33.527)*	0.462 *(0.281)*	15.10 *(2.975)*	188 *(86.7)*	65 *(18.3)*	74 *(23.6)*	....
31.34 *(23.37)*	2534	4.315 *(16.334)*	0.960 *(0.584)*	7.26 *(1.431)*	175 *(79.4)*	66 *(18.9)*	76 *(24.7)*	....
91.43 *(68.18)*	2464	6.995 *(26.479)*	0.534 *(0.325)*	13.07 *(2.575)*	182 *(83.6)*	65 *(18.3)*	75 *(23.9)*	....
Av 73.04 *Av (54.47)*	2487	6.199 *(23.466)*	0.592 *(0.360)*	11.78 *(2.321)*	181 *(82.8)*	65 *(18.3)*	75 *(24.1)*	29.010 *(97.962)*

DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 7th (2F) Gear											
115.22 *(85.92)*	6816 *(30.32)*	6.34 *(10.20)*	2299	4.67	8.908 *(33.721)*	0.539 *(0.328)*	12.93 *(2.548)*	189 *(86.9)*	71 *(21.4)*	75 *(23.6)*	29.045 *(98.081)*
75% of Pull at Maximum Power—Ten Hours 7th (2F) Gear											
93.86 *(69.99)*	5166 *(22.98)*	6.81 *(10.97)*	2440	3.32	7.904 *(29.921)*	0.587 *(0.357)*	11.87 *(2.339)*	186 *(85.3)*	72 *(21.9)*	75 *(24.1)*	28.872 *(97.496)*
50% of Pull at Maximum Power—Two Hours 7th (2F) Gear											
64.17 *(47.85)*	3443 *(15.32)*	6.99 *(11.25)*	2470	2.18	6.417 *(24.290)*	0.697 *(0.424)*	10.00 *(1.970)*	185 *(85.0)*	73 *(22.8)*	79 *(26.1)*	29.005 *(97.946)*
50% of Pull at Reduced Engine Speed—Two Hours 9th (3F) Gear											
64.16 *(47.84)*	3445 *(15.32)*	6.99 *(11.25)*	1792	2.18	5.431 *(20.558)*	0.590 *(0.359)*	11.81 *(2.327)*	189 *(87.2)*	76 *(24.2)*	82 *(27.5)*	28.980 *(97.861)*
MAXIMUM POWER IN SELECTED GEARS											
103.58 *(77.24)*	13348 *(59.37)*	2.91 *(4.68)*	2315	14.95	3rd (3S) Gear			185 *(85.6)*	66 *(18.9)*	71 *(21.7)*	28.680 *(96.848)*
112.81 *(84.13)*	10791 *(48.00)*	3.92 *(6.31)*	2301	8.47	4th (4S) Gear			187 *(85.8)*	68 *(20.0)*	70 *(21.1)*	29.070 *(98.163)*
116.52 *(86.89)*	9743 *(43.34)*	4.48 *(7.22)*	2302	7.05	5th (1F) Gear			187 *(85.8)*	68 *(20.0)*	70 *(21.1)*	29.070 *(98.163)*
110.36 *(82.29)*	8273 *(36.80)*	5.00 *(8.05)*	2300	5.85	6th (5S) Gear			186 *(85.6)*	68 *(20.0)*	69 *(20.6)*	29.070 *(98.163)*
116.65 *(86.99)*	6886 *(30.63)*	6.35 *(10.22)*	2299	4.63	7th (2F) Gear			187 *(85.8)*	68 *(20.0)*	69 *(20.6)*	29.070 *(98.163)*
111.64 *(83.25)*	6526 *(29.03)*	6.42 *(10.32)*	2302	4.32	8th (6S) Gear			186 *(85.6)*	67 *(19.4)*	68 *(20.0)*	29.070 *(98.163)*
114.69 *(85.53)*	4837 *(21.51)*	8.80 *(14.31)*	2501	3.07	9th (3F) Gear			186 *(85.6)*	67 *(19.4)*	68 *(20.0)*	29.070 *(98.163)*

Department of Agricultural Engineering

Dates of Test: August 31-September 13, 1982

Manufacturer: ALLIS CHALMERS CORPORATION, P.O. Box 512, Milwaukee, Wisconsin 53201

FUEL, OIL AND TIME: **Fuel** No. 2 Diesel **Cetane No.** 46.6 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60°** *(15°/15°)* 0.8376 **Fuel weight** 6.974 lbs/gal *(0.836 kg/l)* **Oil SAE** 15W-40 **API service classification** SF-CD **To motor** 4.000 gal *(15.141 l)* **Drained from motor** 3.731 gal *(14.122 l)* **Transmission and final drive lubricant** Allis Chalmers Power Fluid 821 **Total time engine was operated** 36.0 hours.

ENGINE: **Make** Allis Chalmers Diesel **Type** six cylinder vertical with turbocharger **Serial No.** 70-22901 **Crankshaft** lengthwise **Rated rpm** 2300 **Bore and stroke** 4.25" × 5.00" *(107.9 mm × 127.0 mm)* **Compression ratio** 15.5 to 1 **Displacement** 426 cu in *(6981 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements **Oil filter** two full flow cartridges **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** two paper cartridges **Muffler** underhood **Exhaust** vertical **Cooling medium temperature control** two thermostats.

CHASSIS: **Type** standard with duals **Serial No.** 8050S 1422 **Tread width** rear 59" *(1499 mm)* to 123" *(3124 mm)* front 62" *(1574 mm)* to 90" *(2286 mm)* **Wheel base** 106" *(2692 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 28.4" *(721 mm)* Vertical distance above roadway 41.2" *(1047 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (6) range operator controlled powershift **Advertised speeds mph** *(km/h)* first 1.8 *(2.9)* second 2.5 *(4.0)* third 3.5 *(5.6)* fourth 4.4 *(7.1)* fifth 4.9 *(7.9)* sixth 5.4 *(8.7)* seventh 6.8 *(11.0)* eighth 6.8 *(11.0)* ninth 9.3 *(15.0)* tenth 11.8 *(19.0)* eleventh 14.6 *(23.5)* twelfth 18.4 *(30.0)* reverse 2.9 *(4.7)*, 7.9 *(12.7)* **Clutch** multiple wet disc hydraulically power actuated and operated by foot pedal **Brakes** multiple wet disc hydraulically power actuated and operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 149.7" *(3.80 m)* left 149.7" *(3.80 m)* (on concrete surface without brake) right 167.5" *(4.25 m)* left 168.4" *(4.28 m)* **Turning space diameter** (on concrete surface with brake applied) right 320.0" *(8.13 m)* left 320.0" *(8.13 m)* (on concrete surface without brake) right 355.5" *(9.03 m)* left 357.0" *(9.07 m)* **Power take-off** 540 rpm at 2230 engine rpm and 1000 rpm at 2252 engine rpm.

LUGGING ABILITY IN 7th (2F) GEAR

Crankshaft Speed rpm	2299	2073	1847	1614	1381	1153
Pull—lbs *(kN)*	6886 *(30.63)*	7846 *(34.90)*	8252 *(36.71)*	8240 *(36.65)*	8040 *(35.76)*	7161 *(31.85)*
Increase in Pull %	0	14	20	20	17	4
Power—Hp *(kW)*	116.65 *(86.99)*	118.91 *(88.67)*	110.97 *(82.75)*	96.83 *(72.21)*	80.92 *(60.35)*	60.55 *(45.16)*
Speed—Mph *(km/h)*	6.35 *(10.22)*	5.68 *(9.15)*	5.04 *(8.12)*	4.41 *(7.09)*	3.77 *(6.07)*	3.17 *(5.10)*
Slip %	4.63	5.32	5.62	5.77	5.62	4.86

TRACTOR SOUND LEVEL WITH CAB	dB(A)
Maximum Available Power—Two Hours	78.0
75% of Pull at Maximum Power—Ten Hours	79.5
50% of Pull at Maximum Power--Two Hours	79.5
50% of Pull at Reduced Engine Speed--Two Hours	76.0
Bystander in 12th (6F) gear	90.0

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi *(kPa)*	Inner Two 18.4-38; 8; 14 *(95)* Outer Two 18.4-38; 6; 14 *(95)*	Inner Two 18.4-38; 8; 14 *(95)* Outer Two 18.4-38; 6; 14 *(95)*
Ballast	—Liquid (each)	None	None
	—Cast Iron (each inner)	910 lb *(413 kg)*	None
Front Tires	—No., size, ply & psi *(kPa)*	Two 11.00-16; 8; 40 *(275)*	Two 11.00-16; 8; 40 *(275)*
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	133 lb *(60 kg)*	None
Height of Drawbar		20.5 in *(520 mm)*	20.5 in *(520 mm)*
Static Weight with Operator—Rear		12820 lb *(5815 kg)*	11000 lb *(4990 kg)*
Front		4280 lb *(1942 kg)*	4015 lb *(1821 kg)*
Total		17100 lb *(7757 kg)*	15015 lb *(6811 kg)*

Allis Chalmers 8030 Powershift Diesel

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump return was maintained at 178°F *(81.3°C)*. Seven gears were chosen between 15% slip and 10 mph *(16.1 km/h)*.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. 1447.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska-Lincoln
Irwin T. Omtvedt, Dean and Director

NEBRASKA TRACTOR TEST 1448
ALLIS CHALMERS 8050 POWERSHIFT DIESEL
12 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1021 rpm)								
152.40 *(113.64)*	2300	9.730 *(36.832)*	0.445 *(0.271)*	15.66 *(3.085)*	189 *(87.4)*	68 *(19.8)*	75 *(24.0)*	29.160 *(98.469)*
Standard Power Take-off Speed (1000 rpm)—One Hour								
155.15 *(115.70)*	2252	9.772 *(36.991)*	0.439 *(0.267)*	15.88 *(3.128)*	190 *(87.8)*	68 *(19.9)*	75 *(23.7)*	29.170 *(98.503)*
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
133.60 *(99.63)*	2376	8.879 *(33.611)*	0.462 *(0.281)*	15.06 *(2.970)*	185 *(85.0)*	68 *(20.0)*	75 *(23.9)*	....
0.00 *(0.00)*	2574	2.985 *(11.299)*	....	....	174 *(78.9)*	68 *(20.0)*	75 *(23.9)*	....
69.64 *(51.93)*	2476	5.997 *(22.701)*	0.601 *(0.365)*	11.61 *(2.288)*	180 *(82.5)*	67 *(19.4)*	74 *(23.3)*	....
152.54 *(113.75)*	2300	9.748 *(36.900)*	0.446 *(0.271)*	15.65 *(3.083)*	188 *(86.9)*	68 *(20.0)*	75 *(23.9)*	....
35.37 *(26.38)*	2516	4.474 *(16.936)*	0.882 *(0.537)*	7.91 *(1.558)*	176 *(79.7)*	68 *(20.0)*	75 *(23.9)*	....
102.67 *(76.56)*	2428	7.408 *(28.042)*	0.503 *(0.306)*	13.86 *(2.730)*	184 *(84.2)*	68 *(20.0)*	76 *(24.4)*	....
Av 82.35 *Av (61.41)*	2445	6.582 *(24.916)*	0.557 *(0.339)*	12.51 *(2.465)*	181 *(82.9)*	68 *(19.9)*	75 *(23.9)*	29.177 *(98.529)*

DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cool-ing med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 5th (1F) Gear											
131.44 *(98.01)*	10072 *(44.80)*	4.89 *(7.88)*	2300	6.02	9.589 *(36.299)*	0.509 *(0.309)*	13.71 *(2.700)*	185 *(85.0)*	58 *(14.2)*	61 *(15.8)*	29.055 *(98.114)*
75% of Pull at Maximum Power—Ten Hours 5th (1F) Gear											
106.06 *(78.95)*	7575 *(33.70)*	5.20 *(8.37)*	2398	4.20	8.252 *(31.238)*	0.548 *(0.333)*	12.75 *(2.500)*	187 *(86.3)*	73 *(22.9)*	82 *(27.7)*	28.706 *(96.936)*
50% of Pull at Maximum Power—Two Hours 5th (1F) Gear											
72.62 *(54.13)*	5050 *(22.46)*	5.39 *(8.68)*	2450	2.76	6.721 *(25.443)*	0.645 *(0.393)*	10.80 *(2.128)*	185 *(84.7)*	74 *(23.3)*	85 *(29.2)*	29.035 *(98.065)*
50% of Pull at Reduced Engine Speed—Two Hours 7th (2F) Gear											
72.78 *(54.27)*	5050 *(22.46)*	5.40 *(8.70)*	1779	2.67	5.754 *(21.779)*	0.551 *(0.335)*	12.65 *(2.492)*	190 *(87.5)*	76 *(24.4)*	88 *(31.1)*	28.670 *(96.814)*
MAXIMUM POWER IN SELECTED GEARS											
106.81 *(79.65)*	16728 *(74.41)*	2.39 *(3.85)*	2390	13.18	2nd (2S) Gear			179 *(81.7)*	52 *(11.1)*	55 *(12.8)*	29.100 *(98.266)*
128.67 *(95.95)*	14515 *(64.56)*	3.32 *(5.35)*	2300	9.20	3rd (3S) Gear			185 *(84.7)*	55 *(12.8)*	58 *(14.4)*	29.080 *(98.199)*
130.62 *(97.40)*	11357 *(50.52)*	4.31 *(6.94)*	2300	6.68	4th (4S) Gear			186 *(85.3)*	55 *(12.8)*	57 *(13.9)*	29.090 *(98.233)*
134.13 *(100.02)*	10281 *(45.73)*	4.89 *(7.87)*	2299	6.14	5th (1F) Gear			184 *(84.4)*	53 *(11.7)*	55 *(12.8)*	29.120 *(98.334)*
125.60 *(93.66)*	8665 *(38.55)*	5.44 *(8.75)*	2300	4.95	6th (5S) Gear			184 *(84.4)*	53 *(11.7)*	55 *(12.8)*	29.120 *(98.334)*
132.41 *(98.74)*	7218 *(32.11)*	6.88 *(11.07)*	2298	4.07	7th (2F) Gear			185 *(85.0)*	54 *(12.2)*	56 *(13.3)*	29.110 *(98.300)*
124.72 *(93.00)*	6731 *(29.94)*	6.95 *(11.18)*	2300	3.83	8th (6S) Gear			185 *(85.0)*	54 *(12.2)*	56 *(13.3)*	29.100 *(98.266)*
127.41 *(95.01)*	4970 *(22.11)*	9.61 *(15.47)*	2301	2.76	9th (3F) Gear			184 *(84.4)*	55 *(12.8)*	57 *(13.9)*	29.090 *(98.233)*

Department of Agricultural Engineering

Dates of Test: September 1-17, 1982

Manufacturer: ALLIS CHALMERS CORPORATION, P.O. Box 512, Milwaukee, Wisconsin 55201

FUEL, OIL AND TIME: **Fuel** No. 2 Diesel **Cetane No.** 46.6 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60°** *(15°/15°)* 0.8376 **Fuel weight** 6.974 lbs/gal *(0.836 kg/l)* **Oil SAE** 15W-40 **API service classification** SE-CD **To motor** 4.052 gal *(15.337 l)* **Drained from motor** 3.325 gal *(12.587 l)* **Transmission and final drive lubricant** Allis Chalmers Power Fluid 821 **Total time engine was operated** 41 hours.

ENGINE: **Make** Allis Chalmers Diesel **Type** six cylinder vertical with turbocharger and intercooler **Serial No.** 70-22331 **Crankshaft** lengthwise **Rated rpm** 2300 **Bore and stroke** 4.25" × 5.00" *(107.9 mm × 127.0 mm)* **Compression ratio** 15.5 to 1 **Displacement** 426 cu in *(6981 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements **Oil filter** two full flow cartridges and one bypass cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** two paper cartridges **Muffler** underhood **Exhaust** vertical **Cooling medium temperature control** two thermostats.

CHASSIS: **Type** standard with duals **Serial No.** 8050 S 1417 **Tread width** rear 61" *(1549 mm)* to 123" *(3124 mm)* front 63" *(1600 mm)* to 91" *(2311 mm)* **Wheel base** 106" *(2692 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 27.7" *(704 mm)* Vertical distance above roadway 39.9" *(1014 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (6) range operator controlled powershift **Advertised speeds mph (km/h)** first 2.0 *(3.2)* second 2.7 *(4.3)* third 3.7 *(6.0)* fourth 4.7 *(7.6)* fifth 5.3 *(8.5)* sixth 5.8 *(9.3)* seventh 7.3 *(11.7)* eighth 7.3 *(11.7)* ninth 10.0 *(16.1)* tenth 12.6 *(20.3)* eleventh 15.6 *(25.1)* twelfth 19.7 *(31.7)* reverse 3.2 *(5.1)*, 8.5 *(13.7)* **Clutch** multiple wet disc hydraulically power actuated and operated by foot pedal **Brakes** multiple wet disc hydraulically power actuated and operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 145.0" *(3.68 m)* left 147.7" *(3.75 m)* (on concrete surface without brake) right 168.2" *(4.27 m)* left 169.1" *(4.30 m)* **Turning space diameter** (on concrete surface with brake applied) right 323.0" *(8.20 m)* left 328.5" *(8.34 m)* (on concrete surface without brake) right 369.5" *(9.39 m)* left 371.2" *(9.43 m)* **Power take-off** 540 rpm at 2250 engine rpm and 1000 rpm at 2252 engine rpm.

LUGGING ABILITY IN 5th (1F) GEAR

Crankshaft Speed rpm	2299	2073	1840	1617	1377	1156
Pull—lbs *(kN)*	10281 *(45.73)*	11806 *(52.52)*	11901 *(52.94)*	11509 *(51.19)*	11318 *(50.34)*	10606 *(47.18)*
Increase in Pull %	0	15	16	12	10	3
Power—Hp *(kW)*	134.13 *(100.02)*	137.35 *(102.43)*	122.74 *(91.53)*	104.58 *(77.99)*	87.63 *(65.35)*	69.28 *(51.66)*
Speed—Mph *(km/h)*	4.89 *(7.87)*	4.36 *(7.02)*	3.87 *(6.22)*	3.41 *(5.48)*	2.90 *(4.67)*	2.45 *(3.94)*
Slip %	6.14	7.06	7.06	6.76	6.76	6.45

TRACTOR SOUND LEVEL WITH CAB	dB(A)
Maximum Available Power—Two Hours	79.0
75% of Pull at Maximum Power—Ten Hours	79.0
50% of Pull at Maximum Power—Two Hours	79.0
50% of Pull at Reduced Engine Speed—Two Hours	76.0
Bystander in 11th (5F) gear	88.0

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi (kPa)	Inner Two 20.8-38; 10; 14 (95) Outer Two 20.8-38; 8; 14 (95)	Inner Two 20.8-38; 10; 14 (95) Outer Two 20.8-38; 8; 14 (95)
Ballast	—Liquid (each inner)	938 lb *(425 kg)*	None
	—Cast Iron (each inner)	930 lb *(422 kg)*	None
Front Tires	—No., size, ply & psi (kPa)	Two 14L-16.1; 6; 28 (195)	Two 14L-16.1; 6; 28 (195)
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	170 lb *(77 kg)*	None
Height of Drawbar		22 in *(560 mm)*	22 in *(560 mm)*
Static Weight with Operator—Rear		15040 lb *(6822 kg)*	11300 lb *(5126 kg)*
Front		4340 lb *(1969 kg)*	4000 lb *(1814 kg)*
Total		19380 lb *(8791 kg)*	15300 lb *(6940 kg)*

Allis Chalmers 8050 Powershift Diesel

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump return was maintained at 168°F *(75.8°C)*. Eight gears were chosen between stability limit and 10 mph *(16.1 km/h)*.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1448.**

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Irwin T. Omtvedt, Dean and Director

NEBRASKA TRACTOR TEST 1449
ALLIS CHALMERS 8070 POWERSHIFT DIESEL
12 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1065 rpm)								
170.72 (127.31)	2400	10.692 (40.474)	0.437 (0.266)	15.97 (3.145)	191 (88.4)	69 (20.4)	75 (24.0)	28.915 (97.642)
Standard Power Take-off Speed (1000 rpm)—One Hour								
171.44 (127.84)	2253	10.403 (39.380)	0.425 (0.257)	16.48 (3.246)	192 (88.7)	69 (20.4)	74 (23.6)	28.925 (97.675)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
151.31 (112.83)	2503	9.961 (37.706)	0.459 (0.279)	15.19 (2.992)	188 (86.7)	70 (21.1)	75 (23.9)	…… ……
0.00 (0.00)	2672	3.137 (11.875)	…… ……	…… ……	175 (79.4)	70 (21.1)	76 (24.2)	…… ……
78.51 (58.54)	2590	6.540 (24.757)	0.582 (0.354)	11.97 (2.359)	182 (83.1)	70 (20.6)	75 (23.9)	…… ……
170.94 (127.47)	2400	10.727 (40.606)	0.438 (0.266)	15.94 (3.139)	192 (88.6)	69 (20.6)	75 (23.9)	…… ……
39.70 (29.60)	2628	4.798 (18.162)	0.843 (0.513)	8.27 (1.630)	177 (80.6)	69 (20.6)	76 (24.2)	…… ……
115.57 (86.18)	2549	8.219 (31.112)	0.496 (0.302)	14.06 (2.770)	186 (85.6)	68 (20.3)	75 (23.9)	…… ……
Av 92.64 Av (69.08)	2557	7.230 (27.369)	0.544 (0.331)	12.81 (2.524)	183 (84.1)	69 (20.7)	75 (24.0)	28.937 (97.715)

DRAWBAR PERFORMANCE

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 7th (2F) Gear											
145.36 (108.40)	9250 (41.19)	5.89 (9.47)	2400	4.54	10.632 (40.246)	0.510 (0.310)	13.67 (2.693)	187 (86.1)	54 (11.9)	58 (14.2)	29.225 (98.688)
75% of Pull at Maximum Power—Ten Hours 7th (2F) Gear											
117.58 (87.68)	7061 (31.41)	6.24 (10.05)	2518	3.51	9.357 (35.346)	0.554 (0.337)	12.59 (2.481)	184 (84.2)	58 (14.3)	60 (15.3)	28.992 (97.902)
50% of Pull at Maximum Power—Two Hours 7th (2F) Gear											
80.87 (60.30)	4707 (20.94)	6.44 (10.37)	2566	2.27	7.602 (28.776)	0.655 (0.399)	10.64 (2.096)	180 (81.9)	51 (10.6)	53 (11.7)	29.245 (98.756)
50% of Pull at Reduced Engine Speed—Two Hours 9th (3F) Gear											
80.93 (60.35)	4708 (20.94)	6.45 (10.38)	1864	2.32	6.472 (24.500)	0.558 (0.339)	12.50 (2.463)	181 (82.8)	53 (11.7)	57 (13.6)	29.235 (98.722)

MAXIMUM POWER IN SELECTED GEARS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %		Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
120.86 (90.13)	18777 (83.52)	2.41 (3.88)	2406	14.60	2nd (2S) Gear	183 (83.9)	57 (13.9)	59 (15.0)	28.910 (97.625)
142.59 (106.33)	15725 (69.94)	3.40 (5.47)	2399	8.15	3rd (3S) Gear	187 (85.8)	57 (13.9)	59 (15.0)	28.900 (97.591)
147.14 (109.72)	13301 (59.16)	4.15 (6.68)	2400	7.12	4th (1F) Gear	187 (86.1)	57 (13.9)	59 (15.0)	28.910 (97.625)
144.07 (107.44)	12251 (54.49)	4.41 (7.10)	2400	6.38	5th (4S) Gear	187 (86.1)	57 (13.9)	59 (15.0)	28.910 (97.625)
139.79 (104.24)	9418 (41.89)	5.57 (8.96)	2401	4.86	6th (5S) Gear	187 (86.1)	57 (13.9)	59 (15.0)	28.910 (97.625)
147.29 (109.83)	9414 (41.88)	5.87 (9.44)	2399	4.86	7th (2F) Gear	187 (86.1)	57 (13.9)	59 (15.0)	28.910 (97.625)
138.88 (103.56)	7329 (32.60)	7.11 (11.44)	2400	3.73	8th (6S) Gear	187 (86.1)	56 (13.3)	59 (15.0)	28.900 (97.391)
144.59 (107.82)	6609 (29.40)	8.20 (13.20)	2396	3.23	9th (3F) Gear	187 (85.8)	56 (13.3)	59 (15.0)	28.900 (97.591)

Department of Agricultural Engineering

Dates of Test: September 1-16, 1982

Manufacturer: ALLIS CHALMERS CORPORATION, P.O. Box 512, Milwaukee, Wisconsin 53201

FUEL, OIL AND TIME: **Fuel** No. 2 Diesel **Cetane No.** 46.6 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60° (15°/15°)** 0.8373 **Fuel weight** 6.972 lbs/gal *(0.836 kg/l)* **Oil SAE** 15W-40 **API service classification** SF-CD **To motor** 3.647 gal *(13.804 l)* **Drained from motor** 3.049 gal *(11.543 l)* **Transmission and final drive lubricant** Allis Chalmers Power Fluid 821 **Total time engine was operated** 40.5 hours.

ENGINE: **Make** Allis Chalmers Diesel **Type** six cylinder vertical with turbocharger and intercooler **Serial No.** 70-22839 **Crankshaft** lengthwise **Rated rpm** 2400 **Bore and stroke** 4.25" × 5.00" *(107.9 mm × 127.0 mm)* **Compression ratio** 15.5 to 1 **Displacement** 426 cu in *(6981 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements **Oil filter** two full flow paper cartridges and one bypass cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** two paper cartridges **Muffler** underhood **Exhaust** vertical **Cooling medium temperature control** two thermostats.

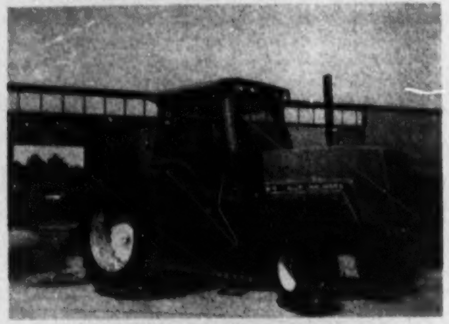
CHASSIS: **Type** standard with duals **Serial No.** 8070S 1227 **Tread width** rear 64" *(1626 mm)* to 123" *(3124 mm)* front 72" *(1829 mm)* to 100" *(2540 mm)* **Wheel base** 106" *(2692 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 27.1" *(689 mm)* Vertical distance above roadway 39.6" *(1006 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with partial (6) range operator controlled powershift **Advertised speeds mph (km/h)** first 2.0 *(3.2)* second 2.7 *(4.3)* third 3.8 *(6.1)* fourth 4.5 *(7.2)* fifth 4.8 *(7.7)* sixth 5.9 *(9.4)* seventh 6.2 *(9.9)* eighth 7.5 *(12.0)* ninth 8.6 *(13.8)* tenth 10.8 *(17.3)* eleventh 13.4 *(21.5)* twelfth 16.8 *(27.0)* reverse 3.2 *(5.1)*, 7.3 *(11.7)* **Clutch** multiple wet disc hydraulically power actuated and operated by foot pedal **Brakes** multiple wet disc hydraulically power actuated and operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 159.7" *(4.06 m)* left 158.6" *(4.03 m)* (on concrete surface without brake) right 173.0" *(4.39 m)* left 172.0" *(4.37 m)* **Turning space diameter** (on concrete surface with brake applied) right 345.0" *(8.76 m)* left 342.7" *(8.70 m)* (on concrete surface without brake) right 371.5" *(9.44 m)* left 370.2" *(9.40 m)* **Power take-off** 1000 rpm at 2253 engine rpm.

LUGGING ABILITY IN 7th (2F) GEAR

Crankshaft Speed rpm	2399	2165	1922	1690	1451	1213
Pull—lbs (kN)	9414 (41.88)	10341 (46.00)	11104 (49.39)	10843 (48.23)	10089 (44.88)	9506 (42.28)
Increase in Pull %	0	10	18	15	7	1
Power—Hp (kW)	147.29 (109.83)	145.05 (108.16)	137.74 (102.71)	118.38 (88.28)	94.98 (70.83)	75.16 (56.05)
Speed—Mph (km/h)	5.87 (9.44)	5.26 (8.47)	4.65 (7.49)	4.09 (6.58)	3.53 (5.68)	2.97 (4.77)
Slip %	4.86	5.49	5.80	5.65	5.17	5.02

TRACTOR SOUND LEVEL WITH CAB	dB(A)
Maximum Available Power—Two Hours	79.5
75% of Pull at Maximum Power—Ten Hours	79.5
50% of Pull at Maximum Power—Two Hours	80.0
50% of Pull at Reduced Engine Speed—Two Hours	77.0
Bystander in 12th (6F) gear	88.5

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi (kPa)	Inner Two 20.8-38; 10; 16 (110) Outer Two 20.8-38; 8; 16 (110)	Inner Two 20.8-38; 10; 16 (110) Outer Two 20.8-38; 8; 16 (110)
Ballast	—Liquid (each inner)	1705 lb (773 kg)	None
	—Cast Iron (each inner)	940 lb (427 kg)	None
Front Tires	—No., size, ply & psi (kPa)	Two 18.4-16.1; 8; 20 (140)	Two 18.4-16.1; 8; 20 (140)
Ballast	—Liquid (each)	None	None
	—Cast Iron (each)	115 lb (52 kg)	None
Height of Drawbar		20.5 in (520 mm)	20.5 in (520 mm)
Static Weight with Operator—Rear		17830 lb (8088 kg)	12540 lb (5688 kg)
Front		4540 lb (2059 kg)	4310 lb (1955 kg)
Total		22370 lb (10147 kg)	16850 lb (7643 kg)



Allis Chalmers 8070 Powershift Diesel

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test code or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump return was maintained at 161°F *(71.8°C)*. During final inspection, an area of scratches approximately 3/8" *(10 mm)* wide extending for the length of the bore was discovered on the left side of #5 cylinder wall. Eight gears were chosen between 15% slip and 10 mph *(16.1 km/h)*.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1449.**

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska-Lincoln
Irwin T. Omtvedt, Dean and Director

NEBRASKA TRACTOR TEST 1450 — HESSTON 1180DT TURBO FIAT DIESEL ALSO HESSTON 1180 TURBO FIAT DIESEL 12 SPEED

POWER TAKE-OFF PERFORMANCE

	Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION									
Rated Engine Speed—Two Hours (PTO Speed—1036 rpm)									
	107.40 (80.15)	2550	6.673 (25.260)	0.455 (0.263)	16.11 (3.173)	188 (86.8)	67 (19.3)	75 (23.9)	28.983 (97.872)
Standard Power Take-off Speed (1000 rpm)—One Hour									
	104.22 (77.72)	2458	6.355 (24.049)	0.425 (0.259)	16.40 (3.232)	187 (86.1)	71 (21.5)	76 (24.3)	28.995 (97.912)
VARYING POWER AND FUEL CONSUMPTION—Two Hours									
	93.66 (69.85)	2615	6.140 (23.242)	0.457 (0.278)	15.25 (3.004)	186 (85.3)	70 (21.1)	75 (23.9)	……
	0.00 (0.00)	2691	2.242 (8.487)	……	……	175 (79.4)	70 (21.1)	75 (23.9)	……
	47.36 (35.34)	2600	4.155 (15.733)	0.605 (0.368)	11.38 (2.270)	180 (82.2)	70 (20.8)	74 (23.6)	……
	108.39 (80.83)	2548	6.708 (25.393)	0.431 (0.262)	16.16 (3.183)	189 (87.2)	70 (20.8)	75 (23.9)	……
	23.82 (17.76)	2674	3.145 (11.905)	0.921 (0.560)	7.57 (1.492)	175 (79.4)	70 (21.1)	76 (24.2)	……
	70.64 (52.68)	2683	5.086 (19.253)	0.502 (0.305)	13.89 (2.736)	185 (85.0)	71 (21.7)	76 (24.7)	……
Av	57.36 (42.77)	2637	4.576 (17.322)	0.536 (0.326)	12.54 (2.469)	182 (83.3)	70 (21.1)	75 (24.1)	29.003 (97.940)

DRAWBAR PERFORMANCE (Front Wheel Drive Disengaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cool-ing med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 7th (M3) Gear											
92.68 (69.11)	6500 (28.91)	5.35 (8.61)	2550	3.02	6.544 (24.772)	0.492 (0.299)	14.16 (2.790)	189 (87.2)	59 (14.7)	70 (21.1)	28.995 (97.912)
75% of Pull at Maximum Power—Ten Hours 7th (M3) Gear											
73.35 (54.69)	4920 (21.89)	5.59 (9.00)	2626	3.58	5.759 (21.799)	0.547 (0.333)	12.74 (2.509)	186 (85.8)	60 (15.5)	65 (18.6)	28.852 (97.463)
50% of Pull at Maximum Power—Two Hours 7th (M3) Gear											
50.27 (37.49)	3280 (14.59)	5.75 (9.25)	2580	2.43	4.823 (18.257)	0.669 (0.407)	10.42 (2.053)	181 (82.5)	54 (11.9)	57 (13.6)	28.930 (97.893)
50% of Pull at Reduced Engine Speed—Two Hours 9th (H1) Gear											
50.35 (37.55)	3280 (14.59)	5.76 (9.26)	1694	2.39	3.514 (13.302)	0.487 (0.296)	14.33 (2.823)	178 (81.1)	57 (13.6)	62 (16.4)	29.025 (98.013)

MAXIMUM POWER IN SELECTED GEARS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Gear	Cool-ing med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
87.56 (65.29)	12905 (57.40)	2.54 (4.09)	2567	14.54	4th (L4) Gear	187 (86.1)	58 (14.4)	65 (18.3)	29.020 (97.996)
92.66 (69.10)	10302 (45.83)	3.37 (5.43)	2549	8.84	5th (M1) Gear	189 (87.2)	56 (13.3)	66 (18.9)	29.040 (98.064)
93.71 (69.88)	8048 (35.80)	4.37 (7.03)	2550	6.20	6th (M2) Gear	189 (86.9)	55 (12.8)	62 (16.7)	29.060 (98.131)
93.64 (69.83)	6560 (29.18)	5.35 (8.62)	2550	4.98	7th (M3) Gear	188 (86.4)	52 (11.1)	57 (13.9)	29.080 (98.199)
92.98 (69.34)	5344 (23.77)	6.52 (10.50)	2551	3.80	8th (M4) Gear	189 (86.9)	53 (11.7)	59 (15.0)	29.070 (98.165)
91.24 (68.04)	3971 (17.66)	8.62 (13.87)	2550	2.92	9th (H1) Gear	188 (86.7)	54 (12.2)	60 (15.6)	29.070 (98.165)

Department of Agricultural Engineering

Dates of Test: September 14-27, 1982

Manufacturer: FIAT TRATTORI S.p.A. Via Pico della Mirandola 72-41100, Modena, Italy

FUEL, OIL AND TIME: Fuel No. 2 Diesel **Cetane No.** 46.6 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60°** *(15°/15°)* 0.8373 **Fuel weight** 6.972 lbs/gal *(0.836 kg/l)* **Oil SAE** 30 **API service classification** SE-SF/CC-CD **To motor** 3.648 gal *(13.807 l)* **Drained from motor** 3.140 gal *(11.886 l)* **Transmission and final drive lubricant** API 303 **Total time engine was operated** 41.5 hours.

ENGINE: Make Fiat Diesel **Type** six cylinder vertical with turbocharger **Serial No.** 8065.24*300-258851* **Crankshaft** lengthwise **Rated rpm** 2550 **Bore and stroke** 4.055" × 4.33" *(103 mm × 110 mm)* **Compression ratio** 15.7 to 1 **Displacement** 335 cu in *(5499 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements with centrifugal precleaner **Oil filter** two full flow paper cartridges **Oil cooler** engine coolant heat exchanger for crankcase oil **Fuel filter** two paper elements **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: Type front wheel assist with duals **Serial No.** 1280DT/12*760554* **Tread width** rear 64.6" *(1640 mm)* to 118.5" *(3010 mm)* front 70.7" *(1797 mm)* to 88" *(2235 mm)* **Wheel base** 105.2" *(2673 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 34.6" *(880 mm)* Vertical distance above roadway 42.5" *(1080 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph (km/h)** first 1.6 *(2.6)* second 2.0 *(3.2)* third 2.4 *(3.9)* fourth 2.9 *(4.7)* fifth 3.7 *(5.9)* sixth 4.6 *(7.4)* seventh 5.6 *(9.0)* eighth 6.7 *(10.8)* ninth 8.8 *(14.2)* tenth 11.1 *(17.9)* eleventh 13.4 *(21.6)* twelfth 16.2 *(26.1)* reverse 3.7 *(6.0)*, 4.7 *(7.6)*, 5.7 *(9.2)*, 6.9 *(11.1)* **Clutch** dry single disc hydraulically actuated and operated by foot pedal **Brakes** multiple wet disc hydraulically operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 202" *(5.14 m)* left 204" *(5.18 m)* (on concrete surface without brake) right 241" *(6.13 m)* left 241" *(6.13 m)* **Turning space diameter** (on concrete surface with brake applied) right 419" *(10.66 m)* left 423" *(10.73 m)* (on concrete surface without brake) right 497" *(12.63 m)* left 497" *(12.63 m)* **Power take-off** 540 rpm at 2261 engine rpm and 1000 rpm at 2458 engine rpm.

LUGGING ABILITY IN 7th (M3) GEAR

Crankshaft Speed rpm	2550	2303	2045	1784	1529	1261	1019
Pull—lbs (kN)	6560 (29.18)	7064 (31.42)	7284 (32.40)	7322 (32.57)	7649 (34.03)	8001 (35.59)	7487 (33.30)
Increase in Pull %	0	8	11	12	17	22	14
Power—Hp (kW)	93.64 (69.83)	90.57 (67.54)	82.85 (61.78)	72.64 (54.17)	65.24 (48.65)	55.72 (41.55)	42.30 (31.54)
Speed—Mph (km/h)	5.35 (8.62)	4.81 (7.74)	4.27 (6.86)	3.72 (5.99)	3.20 (5.15)	2.61 (4.20)	2.12 (3.41)
Slip %	4.98	5.44	5.60	5.29	5.90	6.20	5.90

TRACTOR SOUND LEVEL WITH CAB	dB(A)	Front Wheel Drive Disengaged dB(A)
Maximum Available Power—Two Hours	80.5	79.5
75% of Pull at Maximum Power—Ten Hours		79.0
50% of Pull at Maximum Power—Two Hours		78.0
50% of Pull at Reduced Engine Speed—Two Hours		75.5
Bystander in 12th (H4) gear		88.5

DRAWBAR PERFORMANCE (Front Wheel Drive Engaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cool-ing med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 7th (M3) Gear											
93.68 (69.86)	6468 (28.77)	5.43 (8.74)	2549	3.73	6.580 (24.908)	0.490 (0.298)	14.24 (2.805)	189 (86.9)	62 (16.4)	73 (22.8)	28.930 (97.693)

MAXIMUM POWER IN SELECTED GEARS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Gear	Cool-ing med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
86.50 (64.50)	15317 (68.13)	2.12 (3.41)	2574	14.95	3rd (L3) Gear	189 (86.9)	59 (15.0)	66 (18.9)	29.020 (97.996)
94.87 (70.75)	7099 (31.58)	4.45 (7.16)	2548	4.64	6th (M2) Gear	189 (86.9)	55 (12.8)	64 (17.8)	29.050 (98.097)
94.48 (70.46)	6521 (29.00)	5.43 (8.74)	2550	3.83	7th (M3) Gear	189 (86.9)	51 (10.6)	56 (13.3)	29.080 (98.199)

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi (kPa)	Four 18.4-38; 8; 14 (95)	Four 18.4-38; 8; 14 (95)
Ballast	—Liquid (each inner)	700 lb (318 kg)	None
	—Cast iron (each)	None	None
Front Tires	—No., size, ply & psi (kPa)	Two 14.9-28; 6; 20 (140)	Two 14.9-28; 6; 20 (140)
Ballast	—Liquid (each)	None	None
	—Cast iron (each)	266 lb (121 kg)	None
Height of Drawbar		22 in (560 mm)	22 in (560 mm)
Static Weight with Operator—Rear		11660 lb (5289 kg)	10260 lb (4654 kg)
Front		5225 lb (2370 kg)	4690 lb (2127 kg)
Total		16885 lb (7659 kg)	14950 lb (6781 kg)

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska–Lincoln
Irvin T. Omtvedt, Dean and Director

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump was maintained at 144°F *(62.2°C)*. Six gears were chosen between 15% slip and 10 mph *(16.1 km/h)*.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1450.**

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

NEBRASKA TRACTOR TEST 1451 — HESSTON 1580DT TURBO FIAT DIESEL
ALSO HESSTON 1580 TURBO FIAT DIESEL
12 SPEED

POWER TAKE-OFF PERFORMANCE

Power Hp (kW)	Crank shaft speed rpm	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temperature °F (°C) Cooling medium	Air wet bulb	Air dry bulb	Barometer inch Hg (kPa)
MAXIMUM POWER AND FUEL CONSUMPTION								
Rated Engine Speed—Two Hours (PTO Speed—1061 rpm)								
141.44 (105.47)	2200	8.374 (31.699)	0.413 (0.251)	16.89 (3.327)	176 (80.0)	67 (19.4)	75 [illegible]	29.245 (98.750)
Standard Power Take-off Speed (1000 rpm)—One Hour								
136.14 (101.52)	2075	7.878 (29.821)	0.403 (0.245)	17.28 (3.404)	179 (81.7)	67 (19.4)	74 (23.3)	29.210 (98.638)
VARYING POWER AND FUEL CONSUMPTION—Two Hours								
124.33 (92.71)	2276	7.666 (29.019)	0.430 (0.261)	16.22 (3.195)	177 (80.6)	67 (19.4)	74 (23.3)	......
0.00 (0.00)	2438	2.626 (9.940)	......	......	174 (78.9)	67 (19.4)	74 (23.3)	......
64.69 (48.24)	2366	5.113 (19.355)	0.551 (0.335)	12.65 (2.492)	176 (79.7)	66 (19.2)	74 (23.6)	......
142.10 (105.96)	2200	8.419 (31.869)	0.413 (0.251)	16.88 (3.325)	180 (81.9)	68 (20.0)	75 (23.9)	......
32.77 (24.44)	2399	3.852 (14.581)	0.819 (0.498)	8.51 (1.676)	174 (78.6)	68 (20.0)	75 (23.9)	......
95.16 (70.96)	2322	6.349 (24.034)	0.465 (0.283)	14.99 (2.952)	177 (80.6)	68 (20.3)	75 (23.9)	......
Av 76.51 Av (57.05)	2384	5.671 (21.467)	0.517 (0.314)	13.49 (2.658)	176 (80.0)	68 (19.8)	75 (23.7)	29.183 (98.548)

DRAWBAR PERFORMANCE
(Front Wheel Drive Disengaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 7th (M3) Gear											
122.32 (91.21)	8395 (37.34)	5.46 (8.79)	2200	5.09	8.321 (31.500)	0.474 (0.288)	14.70 (2.896)	179 (81.4)	58 (14.4)	68 (20.0)	29.075 (98.182)
75% of Pull at Maximum Power—Ten Hours 7th (M3) Gear											
99.03 (73.84)	6377 (28.37)	5.82 (9.37)	2311	3.64	7.317 (27.698)	0.515 (0.313)	13.53 (2.666)	176 (79.8)	48 (8.7)	53 (11.4)	29.150 (98.466)
50% of Pull at Maximum Power—Two Hours 7th (M3) Gear											
68.29 (50.93)	4251 (18.91)	6.02 (9.70)	2362	2.41	5.954 (22.539)	0.608 (0.370)	11.47 (2.259)	175 (79.3)	44 (6.7)	47 (8.1)	29.285 (98.891)
50% of Pull at Reduced Engine Speed—Two Hours 9th (H1) Gear											
68.38 (50.99)	4251 (18.91)	6.03 (9.71)	1499	2.41	4.645 (17.583)	0.473 (0.288)	14.72 (2.900)	175 (79.4)	51 (10.6)	58 (14.4)	29.275 (98.857)

MAXIMUM POWER IN SELECTED GEARS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Gear	Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
109.18 (81.41)	15342 (68.24)	2.67 (4.29)	2206	14.06	4th (L4) Gear	176 (80.0)	47 (8.3)	49 (9.4)	29.120 (98.334)
121.01 (90.24)	13271 (59.03)	3.42 (5.50)	2196	9.37	5th (M1) Gear	180 (81.9)	55 (12.8)	61 (16.1)	29.110 (98.300)
123.93 (92.41)	10435 (46.41)	4.45 (7.17)	2200	6.43	6th (M2) Gear	179 (81.7)	54 (12.2)	56 (13.0)	29.110 (98.300)
124.15 (92.58)	8502 (37.82)	5.48 (8.81)	2201	5.01	7th (M3) Gear	178 (80.8)	51 (10.6)	56 (13.3)	29.120 (98.334)
123.24 (91.90)	6936 (30.85)	6.66 (10.72)	2200	4.04	8th (M4) Gear	178 (81.1)	56 (13.3)	62 (16.7)	29.110 (98.300)
121.67 (90.73)	5187 (23.07)	8.80 (14.16)	2199	3.13	9th (H1) Gear	177 (80.6)	57 (13.9)	64 (17.8)	29.110 (98.300)

Department of Agricultural Engineering

Dates of Test: September 13-23, 1982

Manufacturer: FIAT TRATTORI S.p.A. Via Pico della Mirandola 72-41100, Modena, Italy

FUEL, OIL AND TIME: **Fuel** No. 2 Diesel **Cetane No.** 46.6 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60°** *(15°/15°)* 0.8371 **Fuel weight** 6.970 lbs/gal *(0.835 kg/l)* **Oil SAE** 30 **API service classification** SE-SF/CC-CD **To motor** 4.047 gal *(15.321 l)* **Drained from motor** 3.438 gal *(13.014 l)* **Transmission and final drive lubricant** API 303 **Total time engine was operated** 38.5 hours.

ENGINE: **Make** Fiat Diesel **Type** six cylinder vertical with turbocharger **Serial No.** OM8365.25.501*750869 **Crankshaft** lengthwise **Rated rpm** 2200 **Bore and stroke** 4.528" × 5.118" *(115 mm × 130 mm)* **Compression ratio** 15.5 to 1 **Displacement** 494 cu in *(8102 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements with centrifugal precleaner **Oil filter** one full flow cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil **Fuel filter** one felt element and one paper cartridge **Muffler** vertical **Cooling medium temperature control** one thermostat.

CHASSIS: **Type** front wheel assist with duals **Serial No.** 1580 DT/12*742411* **Tread width** rear 64.6" *(1640 mm)* to 121" *(3075 mm)* front 74.8" *(1900 mm)* to 86.6" *(2200 mm)* **Wheel base** 113.6" *(2885 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 37.2" *(945 mm)* Vertical distance above roadway 42.5" *(1080 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph (km/h)** first 1.5 *(2.5)* second 1.9 *(3.1)* third 2.3 *(3.7)* fourth 2.8 *(4.5)* fifth 3.5 *(5.7)* sixth 4.4 *(7.1)* seventh 5.4 *(8.6)* eighth 6.5 *(10.4)* ninth 8.5 *(13.6)* tenth 10.6 *(17.1)* eleventh 12.9 *(20.7)* twelfth 15.5 *(25.0)* reverse 3.6 *(5.8)*, 4.5 *(7.2)*, 5.5 *(8.8)*, 6.6 *(10.6)* **Clutch** single dry disc hydraulically actuated and operated by foot pedal **Brakes** multiple wet disc hydraulically operated by two foot pedals which can be locked together **Steering** hydrostatic **Turning radius** (on concrete surface with brake applied) right 225" *(5.72 m)* left 233" *(5.91 m)* (on concrete surface without brake) right 265" *(6.72 m)* left 267" *(6.77 m)* **Turning space diameter** (on concrete surface with brake applied) right 467" *(11.87 m)* left 482" *(12.25 m)* (on concrete surface without brake) right 546" *(13.87 m)* left 550" *(13.97 m)* **Power take-off** 540 rpm at 1950 engine rpm and 1000 rpm at 2075 engine rpm.

LUGGING ABILITY IN 7th (M3) GEAR

Crankshaft Speed rpm	2201	1972	1754	1537	1306	1111
Pull—lbs (kN)	8502 (37.82)	9040 (40.21)	9406 (41.84)	9609 (42.74)	9533 (42.40)	8646 (38.46)
Increase in Pull %	0	6	11	13	12	2
Power—Hp (kW)	124.15 (92.58)	117.72 (87.78)	108.70 (81.06)	97.06 (72.37)	81.79 (60.99)	63.51 (47.36)
Speed—Mph (km/h)	5.48 (8.81)	4.88 (7.86)	4.33 (6.97)	3.79 (6.10)	3.22 (5.18)	2.75 (4.43)
Slip %	5.01	5.33	5.49	5.65	5.66	5.17

TRACTOR SOUND LEVEL WITH CAB	dB(A)	Front Wheel Drive Disengaged dB(A)
Maximum Available Power—Two Hours	82.0	81.0
75% of Pull at Maximum Power—Ten Hours		81.0
50% of Pull at Maximum Power—Two Hours		80.0
50% of Pull at Reduced Engine Speed—Two Hours		76.5
Bystander in 12th (H4) gear		88.0

DRAWBAR PERFORMANCE
(Front Wheel Drive Engaged)

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 7th (M3) Gear											
123.06 (91.76)	8283 (36.84)	5.57 (8.97)	2200	3.82	8.321 (31.500)	0.471 (0.287)	14.79 (2.913)	178 (81.1)	60 (15.6)	70 (21.1)	29.020 (97.996)

MAXIMUM POWER IN SELECTED GEARS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Gear	Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
108.16 (80.65)	18187 (80.90)	2.23 (3.59)	2273	14.71	3rd (L3) Gear	178 (80.8)	44 (6.7)	44 (6.7)	29.120 (98.334)
125.09 (93.28)	10302 (45.83)	4.55 (7.33)	2190	4.84	6th (M2) Gear	177 (80.3)	53 (11.7)	58 (14.4)	29.120 (98.334)
124.27 (92.67)	8365 (37.21)	5.57 (8.97)	2200	3.78	7th (M3) Gear	176 (80.0)	50 (10.0)	55 (12.8)	29.120 (98.334)

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	—No., size, ply & psi (kPa)	Four 20.8-38; 8; 14 (97)	Four 20.8-38; 8; 14 (97)
Ballast	—Liquid (each inner)	1150 lb (522 kg)	None
	—Cast iron (each)	None	None
Front Tires	—No., size, ply & psi (kPa)	Two 16.9-28; 8; 18 (125)	Two 16.9-28; 8; 18 (125)
Ballast	—Liquid (each)	None	None
	—Cast iron (each)	80 lb (36 kg)	None
Height of Drawbar		23 in (585 mm)	22 in (567 mm)
Static Weight with Operator—Rear		13440 lb (6096 kg)	11160 lb (5062 kg)
Front		5620 lb (2549 kg)	5460 lb (2477 kg)
Total		19060 lb (8645 kg)	16620 lb (7539 kg)

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump was maintained at 122°F *(50.0°C)*. Six gears were chosen between 15% slip and 10 mph *(16.1 km/h)*.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. 1451.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
W. E. SPLINTER
L. L. BASHFORD
Board of Tractor Test Engineers

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska-Lincoln
Irvin T. Omtvedt, Dean and Director

NEBRASKA TRACTOR TEST 1452 — STEIGER COUGAR III ST-250 DIESEL
20 SPEED
(SERIAL NUMBERS 104-00331 AND UP)

DRAWBAR PERFORMANCE AT 2100 RPM

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 11th Gear											
211.29 (157.49)	12961 (57.63)	6.11 (9.83)	2100	2.72	13.931 (52.734)	0.460 (0.280)	15.16 (2.987)	179 (81.7)	52 (10.8)	56 (13.3)	29.105 (98.285)
75% of Pull at Maximum Power—Ten Hours 11th Gear											
169.26 (126.22)	9956 (44.30)	6.38 (10.28)	2164	2.26	11.758 (44.508)	0.484 (0.295)	14.40 (2.836)	180 (82.3)	68 (20.1)	75 (24.0)	28.518 (96.301)
50% of Pull at Maximum Power—Two Hours 11th Gear											
115.54 (86.16)	6625 (29.47)	6.54 (10.53)	[illegible]	1.61	9.054 (34.273)	0.546 (0.332)	12.76 (2.514)	180 (82.2)	62 (16.7)	72 (22.2)	28.650 (96.479)
50% of Pull at Reduced Engine Speed—Two Hours 14th Gear											
115.45 (86.09)	6626 (29.47)	6.53 (10.51)	1515	1.60	7.584 (28.708)	0.456 (0.279)	15.22 (2.998)	180 (81.9)	64 (17.5)	75 (23.9)	28.500 (96.443)

MAXIMUM POWER IN SELECTED GEARS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Gear	Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
185.40 (138.25)	[illegible] (131.59)	2.35 (3.79)	2150	14.48	4th Gear	179 (81.4)	51 (10.6)	53 (11.7)	28.590 (96.814)
199.49 (148.68)	26866 (119.51)	2.77 (4.46)	2099	9.62	5th Gear	180 (82.2)	55 (12.8)	64 (17.8)	29.000 (97.929)
203.25 (151.56)	23679 (105.33)	3.22 (5.18)	2099	6.64	6th Gear	180 (82.2)	55 (12.8)	64 (17.8)	29.000 (97.929)
210.87 (157.25)	21420 (95.28)	3.69 (5.94)	2101	5.19	7th Gear	180 (82.2)	55 (12.8)	64 (17.8)	29.010 (97.962)
212.58 (158.52)	19002 (84.53)	4.20 (6.75)	2100	4.40	8th Gear	180 (81.9)	55 (12.8)	62 (16.7)	29.030 (98.030)
215.04 (160.35)	16952 (75.41)	4.76 (7.66)	2101	3.77	9th Gear	180 (81.9)	55 (12.8)	62 (16.7)	29.050 (98.097)
215.35 (160.57)	14989 (66.67)	5.39 (8.67)	2101	3.13	10th Gear	180 (81.9)	55 (12.8)	62 (16.7)	29.060 (98.131)
215.96 (161.06)	13248 (58.93)	6.11 (9.84)	2105	2.81	11th Gear	180 (82.2)	54 (12.2)	61 (16.1)	29.070 (98.165)
214.35 (159.84)	11663 (51.88)	6.89 (11.09)	2100	2.64	12th Gear	180 (82.2)	55 (12.8)	64 (17.8)	28.990 (97.895)
214.12 (159.67)	10055 (44.73)	7.99 (12.85)	2098	2.15	13th Gear	180 (82.2)	56 (13.3)	64 (17.8)	28.980 (97.861)
212.49 (158.45)	8844 (39.34)	9.01 (14.50)	2098	2.07	14th Gear	180 (82.2)	56 (13.3)	64 (17.8)	28.970 (97.827)

LUGGING ABILITY IN 11th GEAR

Crankshaft Speed rpm	2103	1886	1674	1469	1247	1047
Pull—lbs (kN)	13248 (58.93)	16256 (72.31)	16964 (75.46)	18119 (80.60)	18085 (80.45)	16240 (72.24)
Increase in Pull %	0	23	28	37	37	23
Power—Hp (kW)	215.96 (161.04)	236.05 (176.01)	218.24 (162.74)	203.71 (151.90)	172.60 (128.71)	130.83 (97.56)
Speed—Mph (km/h)	6.11 (9.84)	5.44 (8.76)	4.82 (7.76)	4.22 (6.79)	3.58 (5.76)	3.02 (4.86)
Slip %	2.81	3.45	3.61	4.09	4.09	3.61

TRACTOR SOUND LEVEL WITH CAB	1700 RPM dB(A)	2100 RPM dB(A)
Maximum Available Power—Two Hours	76.0	77.0
75% of Pull at Maximum Power—Ten Hours		77.0
50% of Pull at Maximum Power—Two Hours		76.5
50% of Pull at Reduced Engine Speed—Two Hours		75.5
Bystander in 20th gear		100.5

Department of Agricultural Engineering

Dates of Test: September 21 to October 1, 1982

Manufacturer: STEIGER TRACTOR, INC., 406 Main Avenue, Fargo, North Dakota 58126

FUEL, OIL AND TIME: **Fuel** No. 2 Diesel **Cetane No.** 46.6 (rating taken from oil company's inspection data) **Specific gravity converted to 60°/60°** *(15°/15°)* 0.8373 **Fuel weight** 6.972 lbs/gal *(0.836 kg/l)* **Oil SAE** 15W-40 **API service classification** CD, CC, SF **To motor** 5.531 gal *(20.938 l)* **Drained from motor** 4.840 gal *(18.323 l)* **Transmission and hydraulic lubricant** SAE 10 hydraulic oil **Final drive lubricant** SAE 85W90 **Total time engine was operated** 32.5 hours.

ENGINE: **Make** Caterpillar Diesel **Type** six cylinder vertical with turbocharger and intercooler **Serial No.** 64Z00713 **Crankshaft** lengthwise **Rated rpm** 1700 to 2100 **Bore and stroke** 4.75" × 6.0" *(121 mm × 152 mm)* **Compression ratio** 15.0 to 1 **Displacement** 638 cu in *(10455 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements with aspirator **Oil filter** one full flow cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for transmission and transfer case oil, radiator for hydraulic oil **Fuel filter** one paper cartridge **Muffler** none **Cooling medium temperature control** one thermostat.

CHASSIS: **Type** four wheel drive with duals **Serial No.** 104-02001 82 **Tread width** rear 79.0" *(2007 mm)* to 136.4" *(3464 mm)* front 79.0" *(2007 mm)* to 136.4" *(3464 mm)* **Wheel base** 128" *(3251 mm)* **Center of gravity** (without operator or ballast, with minimum tread, with fuel tank filled and tractor serviced for operation) Horizontal distance forward from center-line of rear wheels 74.2" *(1885 mm)* Vertical distance above roadway 44.6" *(1132 mm)* Horizontal distance from center of rear wheel tread 0" *(0 mm)* to the right/left **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Advertised speeds mph (km/h)** first 1.8 *(2.9)* second 2.0 *(3.3)* third 2.3 *(3.7)* fourth 2.6 *(4.2)* fifth 3.0 *(4.8)* sixth 3.3 *(5.4)* seventh 3.8 *(6.1)* eighth 4.2 *(6.8)* ninth 4.8 *(7.7)* tenth 5.4 *(8.6)* eleventh 6.1 *(9.8)* twelfth 6.8 *(11.0)* thirteenth 7.9 *(12.7)* fourteenth 8.8 *(14.2)* fifteenth 10.1 *(16.2)* sixteenth 11.3 *(18.1)* seventeenth 12.6 *(20.3)* eighteenth 14.1 *(22.7)* nineteenth 16.0 *(25.8)* twentieth 17.9 *(28.8)* reverse 1.8 *(2.9)*, 2.0 *(3.3)*, 2.3 *(3.7)*, 2.6 *(4.2)* **Clutch** multiple dry disc hydraulically operated by foot pedal **Brakes** multiple dry disc hydraulically operated by foot pedal or mechanically by hand lever **Steering** hydrostatic and articulated **Turning radius** (on concrete surface without brake) right 283" *(7.19 m)* left 288" *(7.32 m)* **Turning space diameter** (on concrete surface without brake) right 590" *(14.99 m)* left 600" *(15.24 m)* **Power take-off** none.

DRAWBAR PERFORMANCE AT 1700 RPM

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Fuel Consumption gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp. °F (°C) Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
Maximum Available Power—Two Hours 11th Gear											
214.51 (159.96)	16447 (73.16)	4.89 (7.87)	1700	3.85	13.429 (50.833)	0.436 (0.265)	15.97 (3.147)	180 (81.9)	58 (14.4)	64 (17.8)	28.670 (96.814)

MAXIMUM POWER IN SELECTED GEARS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank-shaft speed rpm	Slip %	Gear	Cooling med	Air wet bulb	Air dry bulb	Barom. inch Hg (kPa)
208.50 (155.48)	29481 (131.14)	2.65 (4.27)	1690	14.67	6th Gear	179 (81.4)	53 (11.7)	56 (13.3)	28.660 (96.781)
204.27 (152.32)	[illegible] (118.44)	2.88 (4.63)	1705	9.08	7th Gear	180 (82.2)	55 (12.8)	64 (17.8)	29.010 (97.962)
208.74 (155.66)	23514 (104.59)	3.33 (5.36)	1700	6.26	8th Gear	180 (82.2)	55 (12.8)	63 (17.2)	29.020 (97.996)
216.87 (161.72)	21417 (95.27)	3.80 (6.11)	1702	5.19	9th Gear	180 (82.2)	55 (12.8)	62 (16.7)	29.040 (98.064)
217.35 (162.08)	18905 (84.09)	4.31 (6.94)	1700	4.33	10th Gear	180 (82.2)	55 (12.8)	62 (16.7)	29.050 (98.097)
218.30 (162.78)	16715 (74.35)	4.90 (7.88)	1699	3.77	11th Gear	180 (82.2)	55 (12.8)	62 (16.7)	29.060 (98.131)
218.45 (162.90)	14774 (65.72)	5.54 (8.92)	1702	3.29	12th Gear	180 (82.2)	55 (12.8)	64 (17.8)	28.990 (97.895)
217.59 (162.25)	12688 (56.44)	6.43 (10.35)	1701	2.72	13th Gear	180 (82.2)	56 (13.3)	64 (17.8)	28.980 (97.861)
216.95 (161.78)	11205 (49.84)	7.26 (11.69)	1699	2.40	14th Gear	180 (82.2)	56 (13.3)	64 (17.8)	28.970 (97.827)
216.40 (161.37)	9853 (43.83)	8.24 (13.25)	1702	2.07	15th Gear	180 (82.2)	56 (13.3)	64 (17.8)	28.960 (97.794)

TIRES, BALLAST AND WEIGHT		Tested Without Ballast
Rear Tires	—No., size, ply & psi *(kPa)*	Four 23.1-34; 8; inner 14 *(95)* outer 12 *(83)*
Ballast	—Liquid (each)	None
	—Cast Iron (each)	None
Front Tires	—No., size, ply & psi *(kPa)*	Four 23.1-34; 8; inner 14 *(95)* outer 12 *(83)*
Ballast	—Liquid (each)	None
	—Cast Iron (each)	None
Height of Drawbar		17 in *(430 mm)*
Static Weight with Operator	—Rear	12575 lb *(5704 kg)*
	Front	17390 lb *(7888 kg)*
	Total	29965 lb *(13592 kg)*

REPAIRS and ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with SAE and ASAE test codes or official Nebraska test procedure. For the maximum power tests, the fuel temperature at the injection pump return was maintained at 132°F *(55.6°C)*. Eleven gears were chosen between 15% slip and 10 mph *(16.1 km/h)*. The performance figures on this report apply to tractor chassis Serial No. 104-00331 and higher.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. 1452.

LOUIS I. LEVITICUS
Engineer-in-Charge

K. VON BARGEN
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L. L. BASHFORD
Board of Tractor Test Engineers

The Agricultural Experiment Station
Institute of Agriculture and Natural Resources
University of Nebraska-Lincoln
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Nebraska Tractor Tests Summarized (Tests from 1973 through 1982)

					ENGINE										—FUEL CONSUMPTION (HP Hours Per Gallon) @:—				
																	—Varying Drawbar Power—		
MAKE AND MODEL OF TRACTOR	Test No.	Fuel Used	Weight With Ballast	Lbs. Ballast Carried	No. of Cyl- inders	Bore and Stroke	Dis- place- ment Cu. in.	Rated RPM Dwbr.	Max. PTO HP @ Rated Engine RPM	Std. PTO RPM	Max. PTO HP @ Std. PTO RPM	Max. Draw- bar HP	MPH @ Max. Dwbr. HP	Max. Lbs. Pull	Max. PTO HP @ Std. PTO RPM	PTO Average @ Varying Power	Max. Avail- able Power	75% of Pull Max. Power	50% of Pull @ Max. Power
Allis-Chalmers																			
175	1156	Gas.	8400	2010	4	4.000x4.500	226	1800	60.88	540	56.02	53.17	5.50	6875	11.78	9.44	10.22	9.64	8.20
5020	1270	Die.	3358	1298	2	3.62x3.74	77	2500	21.79	540	20.78	18.05	5.74	2346	13.99	10.99	11.07	10.51	8.62
5030	1271	Die.	3876	1346	2	3.82x3.94	90.1	2500	26.42	540	25.61	23.92	4.26	3389	13.82	11.28	11.64	11.48	9.68
5040	1230	Die.	6240	2180	3	3.740x4.330	143	2400	40.05	540	36.69	35.86	5.00	4837	15.47	11.80	12.58	12.74	10.44
5050 Diesel	1240	Die.	7690	3280	3	4.055x4.330	168	2700	51.46	540	47.16	45.22	5.68	6075	16.10	12.42	12.58	13.01	11.24
6060 8 Speed	1397	Die.	8945	2480	4	3.876x4.250	200	2300	63.83	540	64.90	52.24	4.83	6846	16.26	12.07	13.27	11.99	10.10
6080 12 Speed	1398	Die.	11790	4200	4	3.876x4.25	200	2300	83.66	1000	74.49	72.32	5.74	9003	15.70	13.14	14.27	12.81	10.93
6140 Diesel	1445	Die.	6195	1735	3	3.858x4.055	142	2500	41.08	541	38.04	33.97	5.20	4768	13.47	10.20	10,87	10.25	8.88
7000PS Diesel	1195	Die.	12580	3030	6	3.875x4.250	301	2200	106.44	1000	105.85	92.64	6.08	9907	15.70	12.21	13.21	12.27	10.16
7010PD Die. 20 Speed	1345	Die.	12790	1530	6	3.875x4.25	301	2300	106.53	1000	107.52	91.44	6.05	9426	15.48	11.57	12.59	11.48	9.68
7010PS Die. 12 Speed	1346	Die.	12740	1365	6	3.875x4.25	301	2300	106.72	1000	106.33	91.61	6.11	9516	15.43	11.74	12.43	11.35	9.58
7020 Power Shift	1259	Die.	15610	3840	6	3.875x4.250	301	2300	123.79	1000	123.50	105.36	6.59	12001	16.01	12.45	13.10	12.25	10.34
7020 Power Director	1260	Die.	15655	4085	6	3.875x4.250	301	2300	123.85	1000	125.51	107.36	6.63	11964	16.08	12.12	13.09	12.08	10.13
7030 Diesel	1119	Die.	16560	4130	6	4.250x5.000	426	2300	130.98	1000	131.14	113.28	4.94	12610	15.45	11.76	12.92	11.90	9.91
7040 Diesel	1166	Die.	17380	5585	6	4.250x5.000	426	2300	136.49	1000	136.26	117.12	4.77	13619	15.35	11.78	12.94	11.86	9.80
7040PS Diesel	1196	Die.	17355	4977	6	4.250x5.000	426	2300	136.30	1000	136.15	117.75	4.61	13547	15.51	11.95	13.05	12.29	10.39
7045 Power Director	1261	Die.	18980	4745	6	4.250x5.000	426	2300	146.18	1000	146.46	127.84	7.04	15430	14.62	11.26	12.16	11.40	9.72
7045 Powershift Diesel	1308	Die.	18990	4390	6	4.25x5.00	426	2300	146.88	1000	146.67	127.61	6.92	15449	14.92	11.32	12.58	11.71	9.62
7050 Diesel	1120	Die.	19530	5005	6	4.250x5.000	426	2300	156.49	1000	156.63	135.11	5.47	16206	16.04	12.69	13.47	12.67	10.53
7060 Diesel	1167	Die.	20490	6500	6	4.250x5.000	426	2300	161.51	1000	160.44	140.59	6.94	17370	15.99	12.71	13.63	12.75	10.55
7060PS Diesel	1197	Die.	20560	5915	6	4.250x5.000	426	2300	161.42	1000	161.65	144.13	4.92	17851	16.08	12.76	13.80	12.98	10.79
7080 Diesel	1168	Die.	21720	7115	6	4.250x5.000	426	2550	181.51	996	181.51	153.78	4.58	18478	15.71	12.24	13.23	12.11	10.02
7580 4WD	1229	Die.	25000	1490	6	4.250x5.000	426	2550	186.35	996	186.35	160.79	6.91	23310	14.81	11.47	12.22	11.39	9.40
8010 Powershift	1446	Die.	13185	555	6	3.875x4.25	301	2300	107.38	1000	109.55	93.01	6.16	9102	15.01	11.49	12.57	11.48	9.54
8030 Powershift	1447	Die.	17100	2085	6	4.25x5.00	426	2300	133.75	1000	134.42	116.65	6.35	13348	15.25	11.78	12.93	11.87	10.00
8050 Powershift	1448	Die.	19380	4075	6	4.25z5.00	426	2300	152.40	1000	155.15	134.13	4.89	16728	15.88	12.51	13.71	12.73	10.80
8070 Powershift	1449	Die.	22370	5520	6	4.25x5.00	426	2400	170.72	1000	171.44	147.29	5.87	18777	16.48	12.81	13.67	12.59	10.64
8550 Diesel	1262	Die.	29360	2320	6	5.250x5.625	731	2500	253.88	998	253.88	224.18	5.83	26220	14.57	10.94	12.47	11.45	9.35
Belarus																			
MTZ 80 Diesel	1139	Die.	11575	3735	4	4.331x4.921	290	2200	74.79	1000	73.88	65.64	5.08	8141	15.30	13.07	13.12	13.12	11.32
250 Diesel	1183	Die.	5490	939	2	4.134x4.724	127	1800	24.95	540	25.02	21.81	4.54	2280	15.56	13.23	13.19	13.20	11.80
T25A Diesel	1200	Die.	5490	939	2	4.134x4.724	127	1800	28.70	540	28.15	24.46	4.51	2570	13.95	13.46	12.21	13.48	11.94
1500 Diesel 12 Speed	1333	Die.	19885	1120	6	5.118x4.528	558	2100	168.76	1000	169.63	151.96	5.31	19311	16.48	13.69	14.53	13.98	12.25
7100 Diesel 16 Speed	1334	Die.	32460	None	12	5.118x5.512	1360	1900	269.62	1003	269.62	259.46	4.78	30845	15.85	13.26	14.82	14.35	12.56
Big Bud																			
525/50 9 Speed	1400	Die.	51920	None	6	6.25x6.25	1150	2100	....	....	....	421.49	5.64	42216	....	....	14.87	13.97	12.01
David Brown																			
885 Gasoline	1143	Gas.	6550	2530	3	3.939x4.000	146.1	2200	39.26	1000†	37.26	32.92	4.61	5308	10.96	8.19	7,55	7.00	7.21
885 Diesel	1137	Die.	6480	2125	3	3.939x4.500	164.4	2200	43.20	1000†	40.87	37.16	4.57	5135	16.61	14.03	13.85	13.73	12.67
990 Diesel	1144	Die.	9350	4690	4	3.939x4.000	194.9	2200	53.77	1000†	50.48	46.34	5.54	7335	15.53	13.23	13.37	12.91	11.14
995 Diesel	1136	Die.	9475	4325	4	3.939x4.500	219	2200	58.77	1000†	55.33	50.42	5.44	7317	16.60	13.94	13.78	13.60	12.40
1210 Diesel	1142	Die.	10440	4640	4	3.939x4.500	219	2300	65.98	1000†	59.40	57.23	6.16	8097	16.40	14.43	13.61	14.36	12.93
1212 Diesel	1138	Die.	10435	4030	4	3.939x4.500	219	2300	65.36	1000†	58.25	54.10	6.92	8137	15.35	13.84	12.56	13.27	11.82
Case																			
870 Manual Diesel	1149	Die.	13510	3435	4	4.625x5.000	336	2100	80.20	1000	77.93	71.09	5.23	10047	14.52	12.13	12.42	12.53	10.88
870 Power Shift	1150	Die.	13760	3665	4	4.625x5.000	336	2100	80.49	1000	76.52	71.04	4.39	10030	13.64	11.60	11.49	12.04	10.60
1190 Manual	1378	Die.	6780	2160	3	3.939x4.500	165	2200	43.09	540	38.54	36.60	7.60	4620	14.99	13.09	12.22	12.59	11.39
1270	1160	Die.	18910	3440	6	4.375x5.000	451	2100	135.39	1000	135.41	121.83	6.46	15648	14.23	11.14	12.16	11.49	9.88
1290 Manual	1379	Die.	9320	2750	4	3.939x4.000	195	2200	53.73	540	47.80	46.41	4.97	6851	15.20	13.34	12.41	12.90	11.68

1370 Diesel	1148	Die.	20290	4945	6	4.625x5.000	504	2200	155.56	1000	156.32	134.25	5.00	16480	15.01	10.95	12.04	10.91	9.11
1390 Manual	1380	Die.	9780	3160	4	3.939x4.500	219	2200	60.59	1000	58.40	52.16	4.92	7348	15.58	13.36	12.89	13.24	11.77
1410 Manual	1209	Die.	10910	3160	4	3.939x4.500	219	2300	80.88	540	79.35	69.25	5.32	7846	17.47	14.69	14.20	14.38	12.45
1410 Power Shift	1210	Die.	10990	3150	4	3.939x4.500	219	2300	80.61	540	76.21	67.98	7.90	7815	16.86	13.76	13.34	13.21	11.45
1490 Manual	1381	Die.	11305	3600	4	3.939x4.500	219	2200	70.51	1000	68.75	60.45	5.63	8340	17.18	13.62	13.82	13.00	11.25
1490 Powershift	1382	Die.	11060	2635	4	3.939x4.500	219	2200	70.91	1000	70.48	61.56	6.76	8405	16.42	12.36	13.12	12.01	10.20
1570	1218	Die.	20350	4060	6	4.625x5.000	504	2100	180.41	1003	180.41	152.96	5.02	17115	15.09	12.47	12.72	12.46	10.99
1690 Manual (1)	1383	Die.	12470	3715	6	3.939x4.500	329	2300	90.39	1000	87.76	78.08	4.27	10536	15.95	13.95	13.20	13.50	12.28
2090 Manual Diesel	1304	Die.	15030	3120	6	4.625x5.000	504	2100	108.74	998	108.74	95.31	7.10	11655	15.40	12.23	13.41	12.69	10.73
2090 Power Shift	1295	Die.	15190	3160	6	4.625x5.00	504	2100	108.29	998	108.29	93.95	6.56	11211	14.94	11.77	12.49	11.96	10.14
2290 Manual Diesel	1296	Die.	15400	2630	6	4.625x5.000	504	2100	128.80	998	128.80	109.36	5.32	12635	14.52	11.66	12.46	11.73	10.07
2290 Powershift Diesel	1297	Die.	15840	2140	6	4.625x5.000	504	2100	129.08	998	129.08	111.68	6.25	12749	14.52	11.53	12.65	11.37	9.77
2390 Powershift Diesel	1302	Die.	18710	3120	6	4.625x5.000	504	2100	160.72	1002	160.72	146.01	6.59	16020	15.23	12.41	13.20	12.66	10.99
2590 Powershift Diesel	1303	Die.	20500	4760	6	4.625x5.000	504	2100	180.38	1003	180.38	159.01	6.57	17865	15.53	12.97	13.42	13.03	11.67
2670 Diesel	1165	Die.	25260	4450	6	4.625x5.000	504	2200	219.44	1008	219.44	194.60	5.28	23618	15.29	12.59	13.42	12.60	10.88
2870 Diesel	1241	Die.	28150	3050	6	5.000x5.710	673	2200	252.10	1009	252.10	219.61	5.72	26386	15.45	12.01	12.98	12.37	10.40
M-B 4/94	1211	Die.	13110	4620	6	3.819x5.039	346	2550	73.33	1000†	70.17	66.33	5.33	10558	15.13	10.68	12.55	11.65	9.49
4490 Diesel	1328	Die.	22450	1610	6	4.625x5.000	504	2200	175.20	1000	175.20	153.30	5.65	21400	15.27	12.36	13.30	12.52	10.87
4690 Diesel	1329	Die.	25230	2920	6	4.625x5.000	504	2200	219.62	1000	219.62	195.60	5.97	24564	15.26	12.76	13.39	12.84	11.21
4890 Diesel	1330	Die.	28460	2710	6	5.00x5.71	673	2200	253.41	1000	253.41	224.81	5.96	27627	16.32	13.02	14.19	13.27	11.36

(1) With mechanical front wheel drive.

John Deere

830 Diesel	1146	Die.	5714	1338	3	3.860x4.330	152	2400	35.30	540	32.62	28.46	5.19	4252	14.74	11.37	11.84	11.03	9.09
850	1280	Die.	3528	992	3	3.15x3.35	78	2600	22.27	540	20.66	18.92	4.90	2699	14.26	11.51	11.23	11.22	10.21
950	1281	Die.	3615	803	3	3.54x3.54	105	2400	27.36	540	28.05	23.46	4.98	3056	14.68	12.36	12.42	12.23	10.63
1050 Diesel	1327	Die.	4140	730	3	3.54x3.54	105	2400	33.41	540	33.42	28.15	5.27	3466	15.46	12.36	12.34	11.99	10.13
1250 Diesel	1437	Die.	5180	90	3	3.74x4.33	143	2500	40.70	540	40.98	34.01	5.39	3750	17.00	13.56	13.90	12.71	10.68
1530 Diesel	1147	Die.	6863	1909	3	4.020x4.330	164	2500	45.38	540	41.36	38.86	5.58	5139	14.28	11.20	12.04	11.47	9.78
2040 Diesel	1191	Die.	6420	1620	3	4.020x4.330	164	2500	40.86	540	37.62	34.15	5.64	4634	15.50	11.18	11.87	11.15	9.51
2040 Diesel 8 Speed	1350	Die.	6500	1465	3	4.19x4.33	179	2500	41.25	540	40.53	33.31	5.63	4873	15.62	11.73	12.02	11.35	9.03
2040 8 Speed TSS (1)	1393	Die.	6040	265	3	4.19x4.33	179	2500	40.44	540	40.22	33.21	5.16	5541	14.87	10.93	11.69	10.71	8.76
2240 Diesel	1192	Die.	7340	2390	3	4.190x4.330	179	2500	50.37	540	46.78	41.28	5.54	5433	15.20	11.08	11.57	11.18	9.51
2240 8 Speed TSS (1)	1394	Die.	6205	310	3	4.19x4.33	179	2500	50.90	540	49.20	42.13	5.08	5777	15.32	11.75	11.98	11.45	9.78
2630	1157	Die.	8430	2630	4	4.190x5.000	276	2500	70.37	540	69.02	58.15	5.38	6470	16.01	10.89	12.10	10.98	8.95
2840 Diesel	1249	Die.	10500	1695	6	4.020x4.330	329	2500	80.65	1000	76.27	67.47	6.21	8386	16.02	11.52	12.36	11.57	9.59
2940 Diesel 16 Speed	1351	Die.	10650	1215	6	4.19x4.33	359	2500	81.17	1000	81.46	67.98	4.64	7601	15.91	11.73	12.81	11.91	9.91
4040 Diesel	1267	Die.	12055	1165	6	4.250x4.750	404	2200	90.80	1002	90.80	77.85	6.36	8936	13.49	10.59	11.24	10.96	9.21
4040 Syncro Range	1359	Die.	12090	1600	6	4.25x4.75	404	2200	90.31	1002	90.31	77.04	8.14	9035	13.87	10.85	11.68	11.29	9.70
4040 Power Shift	1360	Die.	12080	1590	6	4.25x4.75	404	2200	90.79	1000	90.88	78.54	4.45	9195	13.54	10.79	11.50	11.35	9.55
4240 Diesel	1266	Die.	14090	1695	6	4.5625x4.75	466	2200	110.94	1002	110.94	95.18	5.42	11492	14.33	11.09	12.05	11.35	9.52
4240 Syncro Range	1361	Die.	14240	2430	6	4.56x4.75	466	2200	2200	1002	110.81	95.40	4.90	12240	14.17	11.08	12.00	11.47	9.81
4240 Power Shift	1362	Die.	14260	2440	6	4.56x4.75	466	2200	111.06	1000	111.43	95.65	4.51	12450	14.39	11.25	12.13	11.65	10.13
4440 Diesel	1265	Die.	15540	2270	6	4.5625x4.75	466	2200	130.58	1002	130.58	112.56	5.02	13392	15.21	11.73	12.69	11.83	9.90
4440 Pwr Shift	1357	Die.	15775	2656	6	4.56x4.75	466	2200	130.41	1010	130.41	114.16	4.53	13738	15.32	11.83	13.15	12.22	10.60
4640 Diesel	1264	Die.	18120	None	6	4.5625x4.75	466	2200	156.30	998	156.30	134.70	6.45	15362	15.61	12.29	13.30	12.15	10.32
4640 Power Shift	1358	Die.	18585	2805	6	4.56x4.75	466	2200	155.96	1000	157.01	137.04	4.81	15989	15.87	12.17	13.53	12.55	10.78
4840 Diesel	1263	Die.	20370	2240	6	4.5625x4.75	466	2200	180.63	1000	181.63	157.09	4.76	17307	15.85	12.47	13.35	12.54	10.76
8430 Diesel	1179	Die.	23100	290	6	4.563x4.750	466	2100	178.16	993	178.16	160.39	5.56	22503	15.12	11.98	13.44	12.64	10.72
8440 Diesel	1323	Die.	26590	None	6	4.563x4.75	466	2100	179.83	993	179.83	163.26	4.97	25383	15.86	12.55	14.29	13.06	11.25
8450 Diesel	1436	Die.	(5)	(5)	6	4.5625x4.75	466	2100	186.98	993	186.98	175.02	5.97	26567	15.69	12.91	14.45	13.53	11.63
8630 Diesel	1180	Die.	26480	1950	6	5.125x5.000	619	2100	225.59	993	225.59	202.31	4.58	26443	15.34	12.27	13.67	12.80	10.78
8640 Diesel	1324	Die.	28270	None	6	5.125x5.00	619	2100	228.75	993	228.75	208.38	4.63	27782	15.61	12.40	14.06	13.14	11.16
8650 Diesel	1435	Die.	(4)	(4)	6	5.125x5.00	619	2100	238.56	993	238.56	221.80	5.55	28257	15.53	12.65	14.26	13.22	11.52
8850 Diesel	1434	Die.	(3)	(3)	8	5.51x5.00	955	2100	303.99	996	303.99	274.91	6.59	35330	15.74	12.82	14.06	13.34	11.65

(1) With mechanical front wheel drive. (3) Tested without ballast, weight 37700. (4) Tested without ballast, weight 30270. (5) Tested without ballast, weight 29150.

Duetz

D4506	1131	Die.	7390	2880	3	3.940x4.720	172.5	2300	43.15	540	42.17	37.07	4.68	5472	18.01	14.12	14.49	14.05	12.46
D6206	1219	Die.	8780	3410	4	3.937x4.724	230	2050	60.23	540	57.00	52.41	6.04	6944	17.58	15.43	15.10	15.34	14.05
D6806	1220	Die.	11000	4605	4	3.937x4.724	230	2300	68.18	540	62.52	61.87	7.15	9095	16.55	14.73	14.63	15.05	13.52
D13006	1130	Die.	16125	4075	6	3.940x4.720	345	2400	125.77	1000	126.19	110.24	5.74	13509	17.71	14.00	14.97	13.83	11.95
DX-90 Diesel	1305	Die.	13150	3210	5	3.94x4.72	287	2300	84.47	1000	80.82	74.19	6.53	8786	16.45	14.15	13.81	14.07	12.39
DX-110 Diesel	1306	Die.	14940	2360	6	3.94x4.72	345	2300	100.29	1000	93.61	90.82	7.00	11773	15.10	13.71	13.52	14.03	12.60

Nebraska Tractor Tests Summarized (Tests from 1973 through 1982)

						ENGINE									—FUEL CONSUMPTION (HP Hours Per Gallon) @:—				
																	—Varying Drawbar Power—		
MAKE AND MODEL OF TRACTOR	Test No.	Fuel Used	Weight With Ballast	Lbs. Ballast Carried	No. of Cylinders	Bore and Stroke	Displacement Cu. in.	Rated RPM Dwbr.	Max. PTO HP @ Rated Engine RPM	Std. PTO RPM	Max. PTO HP @ Std. PTO RPM	Max. Drawbar HP	MPH @ Max. Dwbr. HP	Max. Lbs. Pull	Max. PTO HP @ Std. PTO RPM	PTO Average @ Varying Power	Max. Available Power	75% of Pull Max. Power	50% of Pull @ Max. Power
Deutz Cont.																			
DX-120	1405	Die	14950	1980	6	4.02x4.92	374	2400	111.29	1000	101.90	97.41	7.32	12615	16.40	13.84	13.59	13.48	12.03
DX-130	1404	Die.	17630	3690	6	4.02x4.92	374	2300	121.27	1000	121.36	105.63	4.76	8330	17.63	13.77	14.14	13.10	11.26
DX-160 Diesel	1307	Die.	18710	3870	6	4.02x4.92	374	2200	145.41	1000	140.99	124.81	6.41	15172	17.82	14.47	14.56	13.95	11.93
Fiat																			
420	1293	Die.	6035	2115	3	3.74x4.33	143	2200	41.34	540	37.45	37.71	5.65	5299	14.81	12.93	13.30	13.92	12.35
580	1292	Die.	9210	2580	3	4.055x4.33	168	2700	51.61	540	48.42	44.20	3.38	8899	14.93	12.59	12.14	12.70	10.50
780	1294	Die.	10230	2830	4	4.055x4.33	224	2500	70.36	540	66.30	64.43	4.06	7776	15.41	13.62	13.93	14.17	12.50
Ford																			
1600 Diesel	1228	Die.	3840	1150	2	3.543x3.937	77.6	2500	23.02	540	19.78	18.53	5.76	2634	14.14	11.82	11.26	11.45	9.72
1700 Diesel	1325	Die.	3725	1110	2	3.54x3.94	77.6	2500	23.26	540	23.02	20.21	5.54	2801	13.02	11.21	10.89	11.48	10.41
1900 Diesel	1326	Die.	4160	1225	3	3.35x3.31	87.2	2800	26.88	540	25.68	23.49	6.20	2964	12.58	10.38	10.41	10.89	9.32
2600 6-Speed	1204	Die.	5990	1550	3	4.200x3.800	158	2000	32.38	540	30.51	27.93	5.57	4591	14.88	11.51	12.27	11.74	10.22
2600 6-Speed	1206	Gas.	6000	1645	3	4.200x3.800	158	2000	32.78	540	31.03	28.25	5.57	4198	11.14	7.89	8.83	8.17	6.73
2600 8-Speed	1222	Die.	6000	460	3	4.200x3.800	158	2000	32.47	540	30.76	28.18	5.56	4452	14.62	11.18	11.94	11.22	9.18
2600 8-Speed	1207	Gas.	6000	1710	3	4.200x3.800	158	2000	34.18	540	32.07	30.20	5.49	4455	11.54	8.38	9.45	8.64	7.15
2610 (8x2)	1421	Die.	5940	1780	3	4.2x4.2	175	2000	36.69	540	35.14	31.45	5.52	4473	16.15	12.82	13.03	12.71	10.51
3600 6-Speed	1203	Die.	6860	2445	3	4.200x4.200	175	2000	40.49	540	37.64	34.47	5.96	5114	15.32	12.12	12.84	12.34	9.97
3600 6-Speed	1208	Gas.	6900	2665	3	4.200x4.200	175	2000	40.17	540	37.91	35.53	5.91	5158	11.23	8.07	9.29	8.77	7.05
3600 8-Speed	1221	Die.	6890	1300	3	4.200x4.200	175	2000	40.55	540	38.31	34.10	5.96	5277	15.33	12.40	12.93	12.51	10.36
3600 8-Speed	1226	Gas.	6900	1500	3	4.200x4.200	175	2000	40.62	540	38.29	35.90	5.93	5123	11.42	8.16	9.02	8.57	6.88
3610 (8x2)	1422	Die.	6340	2070	3	4.4x4.2	192	2000	42.26	540	40.17	36.80	5.85	4964	15.95	12.65	13.37	12.69	11.20
3610 (8x4)	1423	Die.	6340	2045	3	4.4x4.2	192	2000	42.47	540	40.01	35.57	8.55	4917	16.26	12.94	12.85	12.44	10.53
4100 8-Speed	1202	Die.	7500	2590	3	4.200x4.400	183	2000	45.46	540	41.13	41.14	4.63	5557	15.59	11.57	12.57	11.96	10.36
4110 (8x2)	1424	Die.	7500	2850	3	4.4x4.4	201	2200	48.33	540	42.65	41.25	4.51	5681	15.77	12.64	13.26	12.34	10.76
4110 (8x4)	1425	Die.	7500	2785	3	4.4x4.4	201	2200	49.26	540	44.06	40.59	4.92	5691	16.06	12.32	12.92	12.13	10.44
4600 8-Speed	1223	Die.	8220	2340	3	4.400x4.400	201	2200	52.44	540	46.31	45.57	5.24	6342	14.59	11.49	11.82	11.85	10.77
4610 (8x2)	1426	Die.	8190	3095	3	4.4x4.4	201	2200	52.52	540	46.72	44.51	5.17	6402	16.78	13.17	13.96	13.25	11.60
4610 (8x4)	1427	Die.	8230	3085	3	4.4x4.4	201	2200	52.32	540	47.30	43.26	5.62	6534	16.83	13.05	13.53	12.77	11.18
5600 8-Speed	1201	Die.	9690	3785	4	4.200x4.200	233	2100	60.46	540	56.85	52.22	5.49	7105	15.77	12.83	12.87	12.88	11.02
5600 16-Speed	1227	Die.	9690	2380	4	4.200x4.200	233	2100	58.46	540	5600	49.79	5.36	7140	15.06	11.94	12.07	11.94	10.42
5610 (16x4)	1428	Die.	9700	2325	4	4.4x4.2	256	2100	62.54	540	60.58	54.63	5.69	7408	15.57	12.38	12.82	12.44	10.30
5610 (16x8)	1429	Die.	9545	3130	4	4.4x4.2	256	2100	62.57	540	59.99	53.70	6.57	7578	15.49	12.11	12.93	12.03	10.09
6600 8-Speed	1217	Die.	9660	3780	4	4.400x4.200	256	2100	70.56	1000	70.07	61.36	6.91	7131	15.43	12.86	12.28	12.71	11.35
6600 16-Speed	1224	Die.	9700	2680	4	4.400x4.200	256	2100	68.10	1000	68.05	58.74	5.22	7267	14.97	12.64	12.05	12.77	11.05
6610 (16x4)	1430	Die.	9700	2270	4	4.4x4.4	268	2100	72.13	540	68.27	61.17	5.62	7887	15.64	13.14	13.40	12.90	10.77
6610 (16x8)(2)	1431	Die.	9700	2725	4	4.4x4.4	268	2100	72.30	540	69.20	62.64	6.49	7948	15.43	12.91	13.18	12.84	10.87
6700 16-Speed	1244	Die.	9690	1180	4	4.400x4.200	255	2100	68.94	1000	68.62	58.06	7.55	6787	13.77	12.23	11.24	12.38	11.16
7600 16-Speed	1225	Die.	10760	3320	4	4.400x4.200	256	2100	84.79	1000	85.16	67.95	5.61	7779	15.95	12.35	12.44	11.77	9.92
7610 (16x4)	1432	Die.	10800	2220	4	4.4x4.4	268	2100	86.95	1000	86.79	74.22	5.53	8804	15.75	12.44	13.36	12.29	10.35
7710 (16x8) (2)	1433	Die.	10800	2025	4	4.4x4.4	268	2100	86.62	1000	86.55	74.84	6.89	9615	15.87	12.60	13.84	....	....
7700 16-Speed	1242	Die.	10800	2400	4	4.400x4.200	255	2100	84.38	1000	84.29	71.57	7.28	7688	15.24	11.65	11.92	11.21	9.71
8700 16-Speed	1245	Die.	14760	2490	6	4.400x4.400	401	2300	110.58	1000	99.56	100.12	6.94	11581	15.02	11.91	12.37	12.28	10.93
8600 Dual Power	1121	Die.	14790	3360	6	4.400x4.400	401	2300	110.69	1000	99.32	93.26	4.88	11363	15.69	12.84	12.71	12.74	11.19
9600 Dual Power	1122	Die.	18000	6140	6	4.400x4.400	401	2200	135.46	1000	128.46	116.40	6.65	12203	16.88	12.99	13.31	12.64	11.06
9700 16-Speed	1243	Die.	17480	4620	6	4.40x4.400	401	2200	135.64	1000	129.25	118.08	6.55	15010	15.95	11.77	12.63	11.97	10.34
TW-10 Diesel	1301	Die.	15190	2325	6	4.4x4.4	401	2300	110.24	1000	101.09	97.35	5.23	12006	14.86	11.50	12.17	11.91	10.20
TW-20 Diesel	1300	Die.	17180	3945	6	4.4x4.4	401	2200	135.60	1000	131.43	121.47	7.85	14155	16.22	11.78	13.08	12.04	10.09
TW-30 Diesel	1299	Die.	19830	5205	6	4.4x4.4	401	2200	163.28	1000	157.04	144.17	8.32	16553	16.76	12.49	13.67	12.58	10.79
FW-20	1291	Die.	31000	1385	8	4.625x4.125	555	2850	....	....	....	156.85	5.45	27155	....	....	12.12	11.69	10.15
FW30	1288	Die.	31720	410	8	5.500x4.750	903	2600	(1)	....	....	212.02	6.64	27803	....	....	13.71	12.24	10.08
				FW 30 without PTO								220.38	5.85	28302	....	....	14.16	12.73	10.96

FW40	1290	Die.	32950	2320	8	5.500x4.750	903	2600	....	....	....	238.78	6.60	28245	....	....	13.83	12.84	10.73
FW 60	1289	Die.	33970	2870	8	5.500x4.750	903	2600	....	....	....	285.57	7.45	29304	....	....	14.90	13.38	11.27
(1) Equipped with controlled, hydrostatic pto with 105 output horsepower at 1000 rpm.									(2) Drawbar information is from test run with radial ply tires.										
Hesston Fiat																			
480-8 DT and 480-8 12 & 8 Speed	1385	Die.	7805	2485	3	3.937x4.33	158	2600	42.58	540	40.36	37.07	5.07	5265	16.93	12.27	13.34	12.54	10.64
680DT & 680 8 Speed	1352	Die.	10000	2660	4	3.937x4.331	211	2500	62.47	1000	61.20	53.65	5.44	6252	17.40	14.19	14.80	14.20	12.45
780 DT and 780 8-Speed	1386	Die.	10100	3920	4	4.055x4.33	224	2500	70.57	540	66.67	62.06	7.61	6965	16.71	13.96	13.72	13.86	12.26
880DT-5 & 880-5 12 Speed	1353	Die.	11560	2810	5	4.055x4.331	280	2500	81.32	1000	80.95	70.73	7.63	7554	16.27	13.23	13.50	13.44	11.65
980DT & 980 16 Speed	1354	Die.	12645	3795	6	3.937x4.33	316	2400	91.12	996	91.12	77.42	5.00	8351	16.90	13.92	14.25	13.59	12.25
1180 DT Turbo	1450	Die.	16885	1935	6	4.055x4.33	335	2550	107.48	1000	104.22	93.71	4.37	12905	16.40	12.54	14.16	12.74	10.42
1380DT, 1380	1409	Die.	16995	1795	6	4.055x4.33	335	2400	123.16	1000	123.54	104.97	8.08	13105	16.49	13.30	13.60	13.01	11.62
1580DT Turbo	1451	Die.	19060	2460	6	4.528x5.118	494	2200	141.44	1000	136.14	124.15	5.48	15342	17.28	13.49	14.70	13.53	11.47
1880DT, 1880	1410	Die.	19710	3020	6	4.528x5.118	494	2200	162.48	1000	159.83	138.81	5.44	15656	16.88	13.87	14.53	13.58	12.07
International Harvester																			
Hydro 70 Gas	1154	Gas	10140	2265	6	3.750x4.390	290.8	2400	69.61	540	64.10	55.09	7.00	8427	11.10	7.17	7.65	6.75	5.48
Hydro 70 Die	1155	Die.	10430	1990	6	3.875x4.410	312	2400	69.51	540	65.41	54.11	7.00	8310	12.40	9.31	9.45	8.76	6.97
Hydro 84 Diesel	1316	Die.	9120	3115	4	3.937x5.062	246	2400	58.73	540	56.68	43.59	7.60	6572	14.01	10.50	10.13	9.82	8.34
Hydro 86 Diesel	1337	Die.	10710	2545	6	3.875x4.375	310	2400	70.89	540	66.64	54.10	4.03	8815	14.18	10.23	9.92	9.55	8.24
Hydro 100	1158	Die.	12765	635	6	4.300x5.000	436	2400	104.17	1000	101.30	82.13	6.42	9801	14.83	10.50	10.35	10.19	8.95
Hydro 186 Diesel	1257	Die.	13430	None	6	4.300x5.000	436	2400	105.02	1000	100.31	82.77	6.56	11312	13.68	10.06	9.83	9.84	8.46
284	1277	Gas.	3596	1166	4	2.756x2.992	71.3	2600	25.75	1000	24.33	20.64	4.02	2561	11.62	9.54	9.77	8.97	7.52
284 8 Speed	1387	Die.	3600	860	3	3.27x3.94	99	2600	27.47	540	23.92	23.52	5.71	2523	14.40	10.91	10.99	10.53	9.18
464 Gas	1126	Gas.	7355	2460	4	3.562x4.390	175	2400	45.74	540	43.64	42.20	4.51	5465	10.80	8.00	9.65	8.86	7.70
464 Diesel	1127	Die.	7570	2440	3	3.875x5.060	179	2400	44.42	540	41.73	39.97	4.53	5488	14.41	11.49	12.25	12.57	10.67
484 Utility Dsl.	1312	Die.	7710	2710	3	3.875x5.06	179	2200	42.42	540	41.79	38.06	4.78	5500	14.81	11.85	12.75	12.39	10.63
584 Utility & Rowcrop	1313	Die.	8850	3185	4	3.875x4.38	206	2300	52.54	540	50.96	47.47	5.07	6859	15.23	12.34	13.41	12.95	11.10
666 Gas	1152	Gas.	10050	2360	6	3.750x4.390	290.8	2000	66.30	543	66.30	59.31	7.39	7981	11.95	8.45	10.08	9.04	7.27
666 Diesel	1151	Die.	10330	2130	6	3.875x4.410	312	2000	66.29	543	66.29	58.34	5.12	8012	14.24	11.60	12.60	11.98	10.16
674 Utility Gas	1128	Gas.	8330	3035	4	3.812x4.390	200	2400	58.53	540	56.01	53.48	7.04	6583	10.83	8.19	9.40	9.11	8.39
674 Utility Die	1129	Die.	8690	3040	4	3.875x5.060	238.6	2400	61.56	540	58.79	55.91	7.03	6833	15.25	12.16	13.52	13.11	11.31
684 Utility & Rowcrop	1314	Die.	9660	3825	4	3.875x5.06	239	2400	62.52	540	58.75	55.92	5.29	6858	15.55	12.21	13.27	13.02	11.28
686 Diesel (same as 666 Diesel)																			
686 Diesel 10 Speed	1336	Die.	10340	2360	6	3.875x4.375	310	2000	66.36	543	66.36	58.81	5.08	8043	16.07	13.16	13.93	13.27	11.53
784 Rowcrop Diesel	1315	Die.	9920	3830	4	3.937x5.062	246	2400	67.48	1000	64.09	58.65	5.18	8105	16.06	12.75	13.25	12.77	11.07
786 16 Speed	1388	Die.	11930	340	6	3.875x5.0625	358	2400	80.20	1000	77.41	70.25	4.74	9968	15.72	11.40	12.72	11.88	10.00
884 Rowcrop	1376	Die.	10150	3945	4	3.937x5.51	268	2400	72.91	1000	69.76	65.39	5.54	8116	15.76	12.47	13.48	12.91	11.05
886 Diesel	1254	Die.	13040	970	6	3.875x5.085	360	2400	86.14	1000	83.16	76.16	4.70	10485	14.29	10.55	11.77	10.92	9.21
886 Diesel 16 Speed	1338	Die.	13450	1710	6	3.875x5.063	358	2400	86.57	1000	83.91	76.25	4.69	10807	16.01	11.77	12.97	12.21	10.62
886 Dsl. 16 Speed (1)	1339	Die.	13450	1710	6	3.875x5.063	358	2400	90.56	1000	88.23	80.13	4.69	10930	15.84	11.98	12.81	12.38	10.86
(1) Serial No. 2490208 U17026 and up.																			
966 Diesel	1123	Die.	13670	1970	6	4.300x4.750	414	2600	100.80	1000	101.52	88.94	6.58	10036	15.68.	10.94	12.36	11.68	9.84
986 Diesel	1255	Die.	14000	970	6	4.300x5.000	436	2400	105.68	1000	104.18	94.60	4.98	12176	15.56	11.34	12.65	11.72	10.02
1066 Turbo Diesel	1124	Die.	15260	1945	6	4.300x4.750	414	2600	125.68	1000	119.20	108.87	7.03	13000	16.37	11.32	12.78	11.97	9.99
1086 w/Radial Tires	1247	Die.	15640	2915	6	4.300x4.375	414	2400	131.41	1000	133.67	116.28	4.40	13503	16.39	11.90	13.28	12.36	10.45
1086 w/Bias Ply Tires	1247	Die.	15640	3100	6	4.300x4.375	414	2400	131.41	1000	133.67	114.14	6.66	12137	16.39	11.90	12.83	12.08	10.52
1466 Turbo Diesel	1125	Die.	16660	2990	6	4.300x5.000	436	2600	145.77	1000	145.84	127.02	6.93	13673	17.03	11.83	13.03	12.01	10.35
Farmall 1468	1118	Die.	16310	2850	8	4.500x4.313	550	2600	145.49	1000	136.85	129.31	7.33	12932	15.93	12.40	13.87	13.22	11.17
1566 Turbo Dsl	1174	Die.	18260	3065	6	4.300x5.000	436	2600	161.01	1000	162.31	140.35	5.64	15774	16.16	11.51	12.55	11.69	9.86
1568 Diesel	1175	Die.	17350	2400	8	4.500x4.313	550	2600	150.70	1000	147.79	133.79	5.69	14918	14.99	12.08	13.00	12.59	10.80
1586 w/Radial Tires	1248	Die.	17600	2480	6	4.300x5.000	436	2500	161.55	1000	156.09	140.65	5.55	16665	16.51	12.28	13.02	12.38	10.51
1586 w/Bias Ply Tires	1248	Die.	17600	3010	6	4.300x5.000	436	2500	161.55	1000	156.09	140.08	6.05	15124	16.51	12.28	12.74	12.38	10.54
3288 Diesel	1438	Die.	13560	1800	6	3.875x5.062	358	2400	90.46	1000	88.33	80.72	6.11	11486	15.94	11.69	13.16	12.31	10.27
3388 Diesel	1319	Die.	17850	430	6	4.300x5.000	436	2400	130.61	1000	128.59	114.42	6.67	16764	16.85	12.00	13.52	12.17	10.09
3488 Hydro	1439	Die.	13940	1060	6	4.30x5.35	466	2400	112.56	1000	107.11	83.43	6.50	7130	15.28	10.64	10.00	9.73	8.43
3588 Diesel	1320	Die.	18890	1270	6	4.300x5.350	466	2400	150.41	1000	152.07	130.94	6.65	17589	16.98	12.19	13.13	12.20	10.30
3688 Diesel	1440	Die.	14335	1135	6	4.30x5.00	436	2400	113.72	1000	112.48	100.12	5.46	12250	15.75	11.82	13.30	12.35	10.38
3788 12 Speed	1377	Die	20820	2200	6	4.300x5.350	466	2500	170.57	1000	166.39	146.43	7.49	19069	17.12	12.22	13.24	12.25	10.06
4366 Turbo D	1153	Die.	23000	1310	6	4.300x5.350	466	2600	....	....	....	168.90	6.65	23138	....	....	12.54	11.98	10.34
4386 Diesel	1256	Die.	24930	None	6	4.300x5.350	466	2600	....	....	....	176.02	8.71	23321	....	....	12.43	11.92	10.18

Nebraska Tractor Tests Summarized (Tests from 1973 through 1982)

						ENGINE									—FUEL CONSUMPTION (HP Hours Per Gallon) @:—				
																	—Varying Drawbar Power—		
MAKE AND MODEL OF TRACTOR	Test No.	Fuel Used	Weight With Ballast	Lbs. Ballast Carried	No. of Cylinders	Bore and Stroke	Displacement Cu. in.	Rated RPM Dwbr.	Max. PTO HP @ Rated Engine RPM	Std. PTO RPM	Max. PTO HP @ Std. PTO RPM	Max. Drawbar HP	MPH @ Max. Dwbr. HP	Max. Lbs. Pull	Max. PTO HP @ Std. PTO RPM	PTO Average @ Varying Power	Max. Available Power	75% of Pull Max. Power	50% of Pull @ Max. Power
International Harvester Cont.																			
4568	1216	Die.	29870	4120	8	5.3125x4.50	798	2600	....	....	....	235.72	6.76	27995	....	....	12.89	11.79	9.73
4786 Diesel	1317	Die.	34350	4150	8	5.313x4.500	798	2600	....	....	....	265.55	4.79	33468	....	....	12.80	11.92	9.86
5088 Diesel (2)	1419	Die.	16250	240	6	4.30x5.00	436	2400	136.12	1005	136.12	121.17	5.06	14357	15.32	11.65	13.23	12.04	9.90
5288 Diesel	1420	Die.	18585	1530	6	4.30x5.35	466	2400	162.60	1005	162.60	142.37	5.27	17577	16.07	12.62	13.70	12.77	10.75
5488 Diesel	1441	Die.	20005	2765	6	4.30x5.35	456	2400	187.22	1005	187.22	164.82	5.27	18646	16.20	13.00	14.16	13.15	11.21
(2) Drawbar information is from test run with radial ply tires.																			
Kubota																			
L185	1285	Die.	3370	1430	2	3.000x3.23	45.3	2800	15.33	540	14.07	13.03	5.57	1939	13.60	10.90	10.38	10.82	9.26
L185DT	1286	Die.	3415	1283	2	3.000x3.23	45.3	2800	15.45	540	14.16	12.65	3.94	2322	13.49	11.00	10.34	10.24	8.70
L225 Diesel	1145	Die.	3452	1457	3	3.000x3.23	68	2700	20.86	1000†	19.96	17.69	6.34	2015	14.25	11.12	10.71	10.78	9.36
L235	1406	Die.	3715	1280	3	3.0x3.23	68	2600	19.59	540	19.63	16.05	4.68	2440	14.33	11.34	11.33	10.85	9.23
L245	1283	Die.	3694	1498	3	3.000x3.23	68	2800	22.06	540	20.11	18.66	5.74	2067	13.98	11.07	10.74	10.70	9.16
L245DT	1284	Die.	3792	1410	3	3.000x3.23	68	2800	22.35	540	20.15	18.48	6.06	2419	14.33	11.21	10.88	10.67	9.22
L275	1407	Die.	4055	1430	3	3.23x3.23	79.3	2600	23.42	540	23.01	19.70	4.84	2717	14.57	11.55	11.62	11.07	9.95
L285 Diesel	1198	Die.	4030	1585	4	2.992x3.228	91	2400	26.45	540	23.58	22.94	6.62	3134	14.63	12.16	11.78	12.16	10.65
L295DT and L295 8 Speed	1370	Die.	4700	1805	3	3.23 x3.23	79.3	2800	26.46	540	24.91	22.82	4.34	3155	14.59	11.75	11.57	11.39	9.58
L305DT and L305 8 Speed	1371	Die.	5360	2070	3	3.23 x3.23	79.3	2800	26.21	540	25.14	22.96	4.16	3918	13.83	11.14	11.15	11.13	9.46
L345DT and L345 8 Speed	1372	Die.	5435	2000	4	3.00 x3.23	90.7	2800	29.35	540	28.80	26.72	4.62	3795	12.76	10.58	10.68	10.81	9.15
M4500DT & M4500 16 Speed	1348	Die.	7800	2635	6	3.23 x3.23	158.5	2600	49.72	540	44.49	42.50	6.16	4812	15.19	12.22	11.90	12.02	10.77
M5500DT and M5500 16 Speed	1369	Die.	8710	3210	3	4.134x4.528	182	2400	53.99	540	49.18	46.96	5.51	6287	16.22	12.44	13.05	12.77	11.05
M7500DT & M7500 16 Speed	1349	Die.	9510	3530	4	4.134x4.528	243	2400	72.34	540	66.54	61.29	6.65	6327	17.83	14.15	13.93	14.20	12.40
Lamborghini																			
1056DT	1269	Die.	12050	1700	6	3.86x4.72	331	2220	92.13	1000	89.98	79.51	6.86	9135	15.16	13.02	12.45	12.74	10.93
Leyland																			
245 Diesel	1177	Die.	7850	1970	3	3.600x5.000	152.7	2250	39.73	540	36.38	35.09	4.47	5056	16.30	12.60	13.02	12.67	11.29
255 Diesel	1176	Die.	8610	2310	4	3.858x4.921	230	2200	47.91	540	43.85	43.00	6.58	5891	16.42	11.10	12.78	11.81	9.50
472 & 272 Die.9-Speed	1341	Die.	11990	4580	4	3.858x4.921	230	2200	63.52	540	58.50	53.27	5.91	7224	14.97	12.28	11.32	11.67	10.48
482 & 282 Die 9 Speed	1340	Die.	12000	4590	4	3.858x4.921	230	2200	74.28	540	70.86	61.19	5.86	7032	17.58	12.63	12.70	12.10	10.09
2100 Diesel	1178	Die.	13260	4350	6	3.860x4.920	344.7	2100	88.40	1000	83.30	75.70	4.95	8617	16.29	13.20	13.16	13.24	11.24
Long																			
360 Diesel	1298	Die.	6410	1930	3	3.74x4.33	143	2400	36.16	540	31.06	31.91	5.20	4808	14.41	11.97	12.45	12.13	10.48
510 Diesel	1415	Die.	8210	392.5	3	4.02x4.33	164.5	2400	49.15	540	46.91	43.27	5.14	6040	15.74	13.48	13.15	13.52	12.24
510DTC Diesel	1416	Die.	9100	3835	3	4.02x4.33	164.5	2400	49.35	540	46.41	41.87	4.63	5635	16.04	13.72	13.68	13.30	11.69
610 Diesel	1417	Die.	8985	4290	4	4.02x4.33	219	2400	64.33	540	60.57	57.48	2.13	7018	15.93	15.02	13.58	13.51	11.92
900 Diesel and 910 Diesel	1163	Die.	12575	4375	4	4.33x4.72	278	2200	72.88	1000	72.86	62.50	6.53	7843	13.06	12.15	10.97	13.00	11.38
Massey-Ferguson																			
MF154-4	1411	Die.	6920	1615	3	3.6x5.0	153	2250	42.52	540	40.38	35.40	4.52	4144	17.26	13.41	13.79	13.00	11.42
MF184-4 12 Speed	1392	Die.	7775	1395	4	3.875x5.0	236	2200	62.45	540	59.56	52.38	7.13	5500	16.41	12.37	12.61	12.11	10.69
MF205 6 Speed	1363	Die.	2840	935	2	3.46x3.46	65.2	2400	16.56	540	16.34	13.45	4.39	1995	12.97	9.62	9.98	9.65	8.03
MF205-4 6 Speed	1364	Die.	3120	905	2	3.46x3.46	65.2	2400	16.40	540	16.18	13.57	4.86	2131	12.83	9.69	10.04	9.57	8.02
MF210 12 Speed	1365	Die.	3550	1090	2	3.62x3.74	77.1	2500	21.96	540	21.23	18.08	5.81	2159	13.61	11.04	10.84	10.53	9.36

MF210-4 12 Speed	1366	Die.	3765	1030	2	3.62x3.74	77.1	2500	21.77	540	21.02	17.60	6.91	2158	13.18	10.75	9.97	10.44	8.61
MF220 12 Speed	1367	Die.	4220	1455	2	3.82x3.94	90.3	2500	26.37	540	25.52	23.95	4.34	3287	13.36	11.07	11.22	11.60	10.17
MF220-4 12 Speed	1368	Die.	4487	1307	2	3.82x3.94	90.3	2500	26.48	540	26.06	22.91	3.84	3496	14.09	11.56	11.09	11.55	10.02
MF230 Gasoline	1215	Gas.	4870	1030	4	3.375x4.062	145	2000	34.34	540	31.29	29.58	5.08	3717	11.85	8.72	9.89	8.90	7.85
MF230 Diesel	1214	Die.	5110	1110	3	3.600x5.000	153	2000	34.53	540	30.80	29.66	7.64	4030	18.18	14.81	15.06	14.74	12.87
MF235 Gasoline	1194	Gas.	5785	1655	4	3.375x4.062	145	2250	41.13	540	33.87	35.29	5.86	4294	10.49	7.99	8.69	8.07	6.69
MF235 Diesel	1187	Die.	5860	1725	3	3.600x5.000	153	2250	42.39	540	35.29	36.29	5.84	4281	16.78	13.52	13.80	13.39	11.56
245 Diesel	1251	Die.	6150	2100	3	3.600x5.000	153	2250	42.90	540	36.50	36.75	5.92	4279	16.25	12.72	12.43	12.79	11.13
245 Gasoline	1252	Gas.	6020	2120	4	3.375x4.062	145	2250	41.09	540	34.15	35.50	5.90	4298	11.74	9.07	9.50	9.07	7.88
MF255 Gasoline	1190	Gas.	7280	1140	4	3.875x4.500	212	2000	50.01	540	47.14	43.49	5.28	5668	10.91	8.00	8.94	8.54	6.72
MF255 Diesel	1189	Die.	7130	1160	4	3.600x5.000	203	2000	50.69	540	45.55	43.72	5.28	5257	15.88	13.32	13.44	13.36	12.24
255 12-Speed	1250	Die.	7310	895	4	3.875x5.000	236	2000	52.68	540	48.37	44.75	7.89	5591	16.92	12.70	13.34	12.82	11.03
MF265 Diesel	1188	Die.	8200	1815	4	3.875x5.000	236	2000	60.73	540	54.76	51.87	5.23	6248	15.88	13.44	13.52	13.51	12.16
MF275 Diesel	1193	Die.	9330	2720	4	3.975x5.000	248	2000	67.43	540	61.76	60.16	5.16	7292	14.18	12.51	13.04	13.22	11.63
MF285 Diesel	1171	Die.	11760	4110	4	4.500x5.000	318	2000	81.96	1000	81.96	70.53	7.77	8846	14.98	12.68	12.85	12.90	11.34
MF1085 Diesel	1133	Die.	14385	2845	4	4.500x5.000	318	2000	81.58	1000	81.58	70.76	5.58	10355	15.82	13.21	13.43	13.15	11.55
MF1105 Diesel	1132	Die.	16725	4405	6	3.875x5.000	354	2200	100.72	1000	96.43	86.26	4.36	11365	15.43	11.53	12.37	11.55	9.81
MF1135 Diesel	1135	Die.	18900	5350	6	3.875x5.000	354	2200	120.84	1000	118.47	106.52	4.56	13955	16.18	12.24	13.22	12.56	10.71
MF1155 Diesel	1134	Die.	20460	5554	8	4.250x4.75	540	2200	140.97	1000	134.11	124.90	4.40	15630	15.66	12.77	13.15	13.00	11.45
MF1505 Diesel	1172	Die.	20970	3010	8	4.500x5.000	636	2800	174.46	1000	175.95	154.10	6.98	17226	14.55	11.41	12.27	11.43	9.54
MF1805 Diesel	1173	Die.	22790	4790	8	4.500x5.000	636	2800	192.65	1000	191.60	170.17	6.95	18781	14.77	12.14	12.76	12.41	10.77
2675, 8-Speed	1321	Die.	14280	1930	6	3.875x5.0	354	2500	100.84	1000	95.00	86.18	5.91	10226	15.00	11.14	11.48	11.57	10.01
2675, 24-Speed	1309	Die.	14495	2065	6	3.875x5.0	354	2500	103.29	1000	96.67	87.47	5.09	9674	15.43	11.56	11.76	11.49	9.95
2705, 8-Speed	1322	Die.	16800	4295	6	3.875x5.0	354	2500	121.11	1000	114.44	101.47	6.17	12588	16.84	11.22	12.54	11.30	9.45
2705, 24-Speed	1310	Die.	17490	4895	6	3.875x5.0	354	2500	122.20	1000	115.85	104.23	5.30	13085	16.65	11.22	12.74	11.27	9.23
2745 Diesel	1311	Die.	19490	4300	8	4.25x4.75	539	2600	143.40	1000	132.21	125.17	5.51	15386	15.40	10.62	11.96	11.13	9.39
2775	1278	Die	20440	4210	8	4.63x4.75	640	2600	165.95	1000	149.86	143.70	5.72	17407	16.05	11.50	12.57	11.52	9.85
MF2775 8 Speed	1389	Die.	20170	4365	8	4.63x4.75	640	2600	162.09	1000	146.87	139.68	5.73	16766	15.78	11.19	12.45	11.68	9.56
2805 24-Speed	1258	Die.	21170	5540	8	4.630x4.750	640	2500	194.62	1000	181.77	160.72	7.10	17369	16.29	11.33	12.21	11.14	9.27
MF2805 8 Speed	1399	Die.	21430	5395	8	4.63x4.75	640	2500	190.81	1000	186.29	164.58	5.41	17647	16.59	10.97	12.41	11.43	9.58
4800 Die 12 & 18 Speed	1342	Die.	30520	None	8	5.5 4.75	903	2600	179.31	1000	172.88	159.08	4.82	25294	15.10	10.12	12.13	10.73	8.39
4840 Die 12 & 18 Speed	1343	Die.	30920	None	8	5.5 4.75	903	2600	210.67	1000	210.61	186.36	4.84	28191	15.57	10.77	12.41	11.25	9.32
4880 Die 12 & 18 Speed	1344	Die.	32450	1360	8	5.5 x4.75	903	2600	272.81	1000	267.38	244.57	6.54	29272	16.80	11.51	13.50	11.98	9.58
MF4900 18 Speed	1391	Die.	33940	2975	8	5.5 x4.75	903	2600	320.55	1000	323.88	278.78	6.53	30090	16.80	11.95	13.26	11.82	9.87
Minneapolis-Moline																			
G955	1161	Die.	12060	None	6	4.375x5.000	451	1800	98.38	1000	98.82	83.40	5.44	8374	13.92	11.93	11.26	11.76	10.29
G1355 Diesel	1141	Die.	18070	974	6	4.750x5.500	585	2200	142.62	1007	142.62	128.95	7.89	14178	15.21	12.47	13.61	12.85	11.23
Oliver																			
2255 Diesel	1140	Die.	17990	1583	8	4.500x4.500	573	2600	146.72	1000	147.65	126.13	5.70	14770	15.66	12.47	13.43	12.95	11.25
Same																			
Panter 4WD Diesel	1185	Die.	12000	2772	5	3.860x4.720	276	2200	80.02	1000	79.10	66.67	5.75	10389	14.79	12.74	12.40	12.30	10.00
Tiger 100 Diesel	1268	Die.	11620	2500	5	4.13x4.72	317	2200	90.45	1000	89.42	78.84	6.35	9116	15.48	13.22	12.41	13.08	11.26
Buffalo 4WD Diesel	1186	Die.	13795	3708	6	4.130x4.720	380	2200	104.94	1000	104.94	88.24	4.24	10941	15.23	12.78	12.47	12.44	10.76
Satoh																			
S750DD & S750D 9 Speed	1347	Die.	5550	1620	3	3.386x4.016	108.4	2500	33.45	540	28.11	28.99	5.93	4295	11.92	10.89	9.86	11.18	9.58
Steiger																			
Wildcat III ST-210 & RC-210	1237	Die.	22260	None	8	4.500x5.000	636	2800	....	....	....	171.44	5.84	21052	....	....	12.71	12.58	10.82
Bearcat II	1162	Die.	23020	1585	8	4.500x5.000	636	2800	....	....	....	180.69	6.57	22622	....	....	12.79	12.37	10.82
Bearcat III ST-220	1246	Die.	29380	None	6	5.500x6.000	855	2100	....	....	....	175.58	4.84	26936	....	....	13.24	12.60	11.04
Bearcat III ST-225(1)	1414	Die.	30005	465	6	4.75x6.0	638	2100	....	....	....	197.69	5.47	28805	....	....	13.99	13.54	11.65
Bearcat III PT225	1272	Die.	30825	None	6	4.75x6.00	638	2200	(1)	....	....	180.86	6.33	29749	....	....	12.02	10.80	9.29
			(1) Serial numbers 109-00328 and higher									187.59	5.58	29953	....	....	12.81	11.52	10.07
Cougar II	1170	Die.	27995	1305	6	4.750x6.000	638	2200	....	....	....	228.15	4.44	26432	....	....	13.15	12.77	11.59
Cougar III ST-250	1239	Die.	29800	None	6	4.750x6.000	638	2200	....	....	....	210.35	6.38	26612	....	....	12.74	11.90	10.36
Cougar III ST-250	1452	Die.	(6)	(6)	6	4.75x6.0	638	2100	....	....	....	215.98	5.39	26866	....	....	15.16	14.40	12.76
Cougar III ST-251	1233	Die.	30840	None	6	5.500x6.000	855	2100	....	....	....	205.82	7.98	26880	....	....	14.74	13.69	11.60
Cougar III PT270	1273	Die.	32210	1495	6	4.75x6.00	638	2200	(1)	....	....	219.39	6.29	30122	....	....	12.73	11.81	10.23

Nebraska Tractor Tests Summarized (Tests from 1973 through 1982)

						ENGINE									—FUEL CONSUMPTION (HP Hours Per Gallon) @:—		—Varying Drawbar Power—		
MAKE AND MODEL OF TRACTOR	Test No.	Fuel Used	Weight With Ballast	Lbs. Ballast Carried	No. of Cylinders	Bore and Stroke	Displacement Cu. in.	Rated RPM Dwbr.	Max. PTO HP @ Rated Engine RPM	Std. PTO RPM	Max. PTO HP @ Std. PTO RPM	Max. Drawbar HP	MPH @ Max. Dwbr. HP	Max. Lbs. Pull	Max. PTO HP @ Std. PTO RPM	PTO Average @ Varying Power	Max. Available Power	75% of Pull Max. Power	50% of Pull @ Max. Power
Steiger Cont.																			
Cougar III PTA 280	1402	Die.	33675	2895	6	5.5x6.0	855	2100	....	....	....	224.92	5.54	15215	....	....	13.74	12.54	10.44
Cougar III PTA-280	1413	Die.	33150	2370	6	5.4x6.5	893	2100	....	....	....	236.55	7.07	32085	....	....	14.24	13.14	11.19
												224.54	4.89	29950	....	....	12.97	12.45	10.76
Cougar III ST-270	1238	Die.	29930	None	6	4.750x6.000	638	2200	....	....	....	228.96	6.38	25371	....	....	13.32	12.62	10.96
Cougar III ST-280	1401	Die.	33105	2625	6	5.5x6.0	855	2100	....	....	....	236.82	5.37	16530	....	....	14.55	13.20	11.05
Cougar III ST-280	1412	Die.	33345	2705	6	5.4x6.5	893	2100	....	....	....	246.13	2.41	32099	....	....	14.85	13.76	11.69
Panther III ST-310	1235	Die.	30850	None	6	5.500x6.000	855	2100	....	....	....	261.78	7.90	26757	....	....	13.95	13.09	11.02
Panther III ST-325	1236	Die.	31080	None	6	5.400x6.500	893	2100	....	....	....	281.94	7.93	28189	....	....	14.82	14.19	12.64
Panther III PTA-325	1355	Die.	33960	3140	6	5.4x6.5	893	2100	....	....	....	274.88	5.34	31876	....	....	14.26	13.45	11.55
Panther III PT350	1274	Die.	34000	2855	8	5.4x4.75	903	2600	(1)	....	....	305.48	6.51	32276	....	....	14.91	13.75	11.32
												311.64	7.38	32059	....	....	15.03	Not Tested	
Tiger II	1169	Die.	29930	2330	8	5.500x4.750	903	2600	....	....	....	270.21	6.73	28097	....	....	13.88	12.70	10.61
Tiger III ST450	1282	Die.	47370	4645	6	6.25x6.25	1150	1700	....	....	....	385.74	5.23	42715	....	....	15.57	Not Tested	
Versatile																			
555 Diesel	1331	Die.	25980	6330	8	4.625x4.125	555	2850	182.25	1000	184.35	154.20	4.56	23533	16.33	11.15	12.96	11.17	8.83
835 12 Speed	1356	Die.	28000	3720	6	5.5x6.0	855	2100	198.23	1009	198.23	179.07	6.13	26380	15.13	11.36	13.16	11.87	9.70
875 Diesel	1279	Die.	29500	4980	6	5.5x6.0	855	2100	248.07	1008	248.07	228.35	9.12	24457	15.45	11.76	13.60	12.28	10.40
875 Diesel	1332	Die.	29480	4160	6	5.5x6.0	855	2100	247.16	1008	247.16	221.66	4.86	26795	16.06	12.02	14.35	12.53	10.34
895 Diesel, 12 Speed	1335	Die.	32500	7880	6	5.5x6.0	855	2100	....	....	....	261.63	6.45	29402	....	....	15.15	13.72	11.57
White																			
2-30 8 Speed	1373	Die.	3853	848	3	3.386x3.386	91.4	2600	28.33	540	24.50	25.81	8.35	2816	12.03	10.27	10.77	11.42	9.61
2-35 8 Speed	1374	Die.	3970	800	3	3.386x4.02	108.4	2400	32.84	540	30.94	30.37	8.00	2978	12.68	10.86	11.23	11.73	10.35
2-45 20 Speed	1395	Die.	6630	660	4	3.858x3.62	169.3	2250	43.73	540	36.62	37.32	3.97	4455	12.70	11.25	10.96	11.00	9.66
2-50 Field Boss	1231	Die.	6880	2325	3	3.940x4.330	158	2500	47.02	540	43.94	41.88	4.80	5640	15.80	13.03	13.26	13.49	11.97
2-60 Field Boss	1232	Die.	8990	3830	4	3.940x4.330	211	2400	63.22	540	54.35	54.78	5.07	7352	17.63	13.82	14.40	13.87	11.93
2-62 20 Speed	1396	Die.	6875	635	4	4.016x4.33	219	2200	61.46	540	54.25	51.63	6.05	4695	16.31	13.85	13.76	13.49	12.08
2-70 Diesel	1212	Die.	9630	1000	6	3.875x4.000	283	2200	70.71	994	70.71	59.47	6.40	7550	14.56	12.28	11.92	12.13	10.72
2-85 Diesel	1213	Die.	12280	580	6	3.875x5.000	354	2200	85.54	1007	85.54	71.93	8.13	9309	14.62	11.72	12.24	11.64	9.71
2-105 Field Boss	1181	Die.	11810	None	6	3.875x5.000	354	2200	105.61	1007	105.61	90.81	6.34	9212	15.76	12.02	12.89	11.95	10.00
2-135	1275	Die.	16360	2225	6	4.56x4.87	478	2200	137.64	1000	138.03	117.67	8.93	11907	14.91	11.38	12.31	11.42	9.73
2-150 Field Boss	1182	Die.	16940	None	6	4.750x5.500	585	2200	147.49	1007	147.49	127.49	5.63	15059	14.46	11.90	12.07	12.14	10.63
4-150 Field Boss	1159	Die.	16960	None	8	4.500x5.000	636	2800	151.87	1000	152.45	133.34	6.34	16925	15.09	11.45	12.46	11.34	9.21
2-155	1276	Die.	16650	None	6	4.56x4.87	478	2200	157.73	1000	162.37	139.68	9.04	14512	15.38	11.91	12.69	11.53	9.97
4-175 Field Boss	1375	Die.	....	....	8	4.5x5.0	636	2600	151.69	1000	151.29	133.72	6.39	19905	15.50	11.70	12.96	11.98	10.01
2-180	1287	Die.	18280	None	8	4.5x5.0	636	2800	181.89	1000	181.89	163.64	6.50	15499	14.38	11.66	12.85	12.48	10.56
4-180 Field Boss	1184	Die.	20600	None	8	4.500x5.000	636	2800	181.07	1000	182.30	156.54	4.59	20469	14.19	11.47	11.79	11.56	9.98
4-210 Field Boss	1318	Die.	23735	None	8	4.5x5.0	636	2800	182.44	1000	182.44	162.25	5.89	22934	14.26	11.53	12.34	12.10	10.25
Yanmar																			
YM240 Diesel	1199	Die.	3305	1355	2	3.543x3.543	70	2400	19.76	540	18.75	16.60	4.86	2442	15.05	12.64	12.35	11.95	10.37
YM226D Diesel	1442	Die.	3380	1080	3	2.95x3.35	68.7	2600	19.42	540	17.87	16.14	4.78	2073	15.07	11.67	11.92	10.93	9.26
YM276D Diesel	1443	Die.	4110	1405	3	3.31x3.35	86.2	2600	23.00	540	22.82	18.93	5.78	2412	14.35	11.06	11.08	10.57	8.90
YM336D Diesel	1444	Die.	5020	1615	3	3.31x3.54	91.3	2600	26.98	540	25.63	23.00	6.28	3086	14.27	11.32	11.39	10.66	9.64

(1) Equipped with controlled hydrostatic pto with 105 output horsepower at 1000 rpm. (6) Tested without ballast, weight 29965.